Instruction Manual

RESIDENTIAL GAS WATER HEATERS

DIRECT VENT GAS MODELS GDV/GDVT

NOT FOR USE IN MANUFACTURED (MOBILE) HOMES

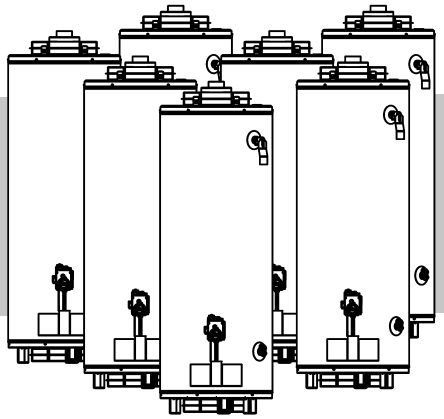
A.O.Smith
Water Heaters

A DIVISION OF A. O. SMITH CORPORATION
Ashland City, TN 37015
www.hotwater.com

DESIGN CERTIFIED TM

EFFICIENCY RATING CERTIFIED
Gama

GAMA certification applies to all residential gas water heaters with capacities of 20 to 100 gallons with input rating of 75,000 BTU/Hr. or less.



Green Choice™
The Eco-Friendly Gas-Fired Burner

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

— **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

— **WHAT TO DO IF YOU SMELL GAS:**

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

— **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

⚠ WARNING

Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.

Failure to follow instructions and safety messages could result in death or serious injury.

Instruction manual must remain with water heater.

• For Your Safety •

AN ODORANT IS ADDED TO THE GAS USED BY THIS WATER HEATER.

ALL TECHNICAL AND WARRANTY QUESTIONS: SHOULD BE DIRECTED TO THE LOCAL DEALER FROM WHOM THE WATER HEATER WAS PURCHASED. IF YOU ARE UNSUCCESSFUL, PLEASE WRITE TO THE COMPANY LISTED ON THE RATING PLATE ON THE WATER HEATER.

KEEP THIS MANUAL IN THE POCKET ON HEATER FOR FUTURE REFERENCE WHENEVER MAINTENANCE ADJUSTMENT OR SERVICE IS REQUIRED.

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PART NO. 186138-000

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SAFE INSTALLATION, USE AND SERVICE

Your safety and the safety of others is extremely important in the installation, use and servicing of this water heater.

Many safety-related messages and instructions have been provided in this manual and on your own water heater to warn you and others of a potential injury hazard. Read and obey all safety messages and instructions throughout this manual. It is very important that the meaning of each safety message is understood by you and others who install, use or service this water heater.

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER	**DANGER indicates an imminently hazardous situation which, if not avoided, could result in injury or death.**
WARNING	**WARNING indicates a potentially hazardous situation which, if not avoided, could result in injury or death.**
CAUTION	**CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**
CAUTION	**CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in property damage.**

All safety messages will generally tell you about the type of hazard, what can happen if you do not follow the safety message and how to avoid the risk of injury.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

WARNING: This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. This appliance can cause low-level exposure to some of the substances included in the Act.

IMPORTANT DEFINITIONS

- **Qualified Installer:** A qualified installer must have ability equivalent to a licensed tradesman in the fields of plumbing, air supply, venting and gas supply, including a thorough understanding of the requirements of the National Fuel Gas Code as it relates to the installation of gas fired water heaters. The qualified installer must also be familiar with the design features and use of flammable vapor ignition resistant water heaters, and have a thorough understanding of this instruction manual.
- **Service Agency:** A service agency also must have ability equivalent to a licensed tradesman in the fields of plumbing, air supply, venting and gas supply, including a thorough understanding of the requirements of the National Fuel Gas Code as it relates to the installation of gas fired water heaters. The service agency must also have a thorough understanding of this instruction manual, and be able to perform repairs strictly in accordance with the service guidelines provided by the manufacturer.
- **Gas Supplier:** The Natural Gas or Propane Utility or service who supplies gas for utilization by the gas burning appliances within this application. The gas supplier typically has responsibility for the inspection and code approval of gas piping up to and including the Natural Gas meter or Propane storage tank of a building. Many gas suppliers also offer service and inspection of appliances within the building.

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⚠ WARNING

Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.

Failure to follow instructions and safety messages could result in death or serious injury.

Instruction manual must remain with water heater.

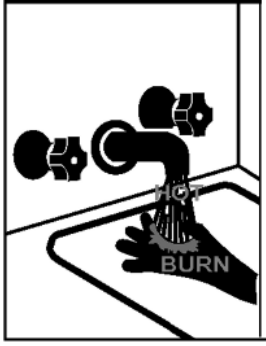
⚠ WARNING

Fire Hazard

For continued protection against risk of fire:

- Do not install water heater on carpeted floor.
- Do not operate water heater if flood damaged.

⚠ DANGER



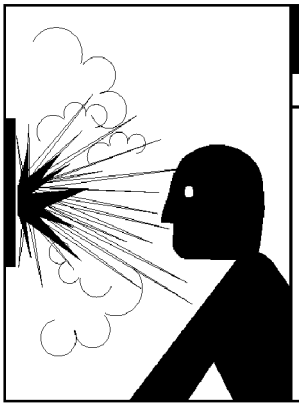
Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.

Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.

Feel water before bathing or showering.

Temperature limiting valves are available.

Read instruction manual for safe temperature setting.



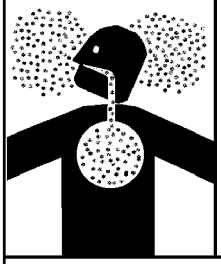
⚠ WARNING

Explosion Hazard

- Overheated water can cause water tank explosion.
- Properly sized temperature and pressure relief valve must be installed in opening provided.

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- **Install vent system in accordance with codes.**
- **Do not operate water heater if flood damaged.**
- **High altitude orifice must be installed for operation above 7,700 feet.**
- **Do not operate if suit buildup.**
- **Do not obstruct water heater air intake with insulating jacket.**
- **Do not place chemical vapor emitting products near water heater.**
- **Gas and carbon monoxide detectors are available.**
- **No vent damper installation is compatible with this power vented water heater.**

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

⚠ WARNING

Fire or Explosion Hazard

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Avoid all ignition sources if you smell LP gas.
- Do not expose water heater control to excessive gas pressure.
- Use only gas shown on rating plate.
- Maintain required clearances to combustibles.
- Keep ignition sources away from faucets after extended period of non-use.

Read instruction manual before installing, using or servicing water heater.

CAUTION

Improper installation and use may result in property damage.

- Do not operate water heater if flood damaged.
- Inspect and replace anode.
- Install in location with drainage.
- Fill tank with water before operation.
- Be alert for thermal expansion.

Refer to instruction manual for installation and service.

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INTRODUCTION

Thank You for purchasing this water heater. Properly installed and maintained, it should give you years of trouble free service.

Abbreviations Found In This Instruction Manual:

- CSA - Canadian Standards Association
- ANSI - American National Standards Institute
- NFPA - National Fire Protection Association
- ASME - American Society of Mechanical Engineers
- GAMA - Gas Appliance Manufacturer’s Association
- UL - Underwriters Laboratories Inc.

This gas-fired water heater is design certified by Underwriters Laboratories Inc. under American National Standard/CSA Standard for Gas Water Heaters ANSI Z21.10.1 • CSA 4.1 (current edition).

PREPARING FOR THE INSTALLATION

1. Read the “General Safety” section, page 3 of this manual first and then the entire manual carefully. If you don’t follow the safety rules, the water heater will not operate properly. It could cause DEATH, SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE. This manual contains instructions for the installation, operation, and maintenance of the gas-fired water heater. It also contains warnings throughout the manual that you must read and be aware of. All warnings and all instructions are essential to the proper operation of the water heater and your safety. Since we cannot put everything on the first few pages, READ THE ENTIRE MANUAL BEFORE ATTEMPTING TO INSTALL OR OPERATE THE WATER HEATER.
2. The installation must conform with these instructions and the local code authority having jurisdiction. In the absence of local codes, installations shall comply with the National Fuel Gas Code ANSI Z223.1/NFPA. This publication is available from the Canadian Standards Association, 8501 East Pleasant Valley Road, Cleveland, OH 44131.
3. If after reading this manual you have any questions or do not understand any portion of the instructions, call the local gas utility or the manufacturer whose name appears on the rating plate.
4. Carefully plan the place where you are going to put the water heater. Correct combustion, vent action, and vent pipe installation are very important in preventing death from possible carbon monoxide poisoning and fires, see Figures 1 and 2. Examine the location to ensure the water heater complies with the “Locating the New Water Heater” section in this manual.
5. For California installation this water heater must be braced, anchored, or strapped to avoid falling or moving during an earthquake. See instructions for correct installation procedures. Instructions may be obtained from California Office of the State Architect, 400 P Street, Sacramento, CA 95814.
6. Massachusetts Code requires this water heater to be installed in accordance with Massachusetts 248-CMR 2.00: State Plumbing Code and 248-CMR 5.00. For more information see next page.

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INSTALLATION REQUIREMENTS FOR THE COMMONWEALTH OF MASSACHUSETTS

For all side wall terminated, horizontally vented power vent, direct vent, and power direct vent gas fueled water heaters installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

INSTALLATION OF CARBON MONOXIDE DETECTORS At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the sidewall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors.

In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements provided that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.

APPROVED CARBON MONOXIDE DETECTORS Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and CSA certified.

SIGNAGE A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, **"GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS."**

INSPECTION The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a) 1 through 4.

EXEMPTIONS: The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:

1. The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the Board; and

2. Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building, or structure used in whole or in part for residential purposes.

MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM PROVIDED When the manufacturer of Product Approved side wall horizontally vented gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for installation of the equipment and the venting system shall include:

1. Detailed instructions for the installation of the venting system design or the venting system components; and

2. A complete parts list for the venting system design or venting system.

MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies "special venting systems," the following requirements shall be satisfied by the manufacturer:
1. The referenced "special venting system" instructions shall be included with the appliance or equipment installation instructions; and

2. The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

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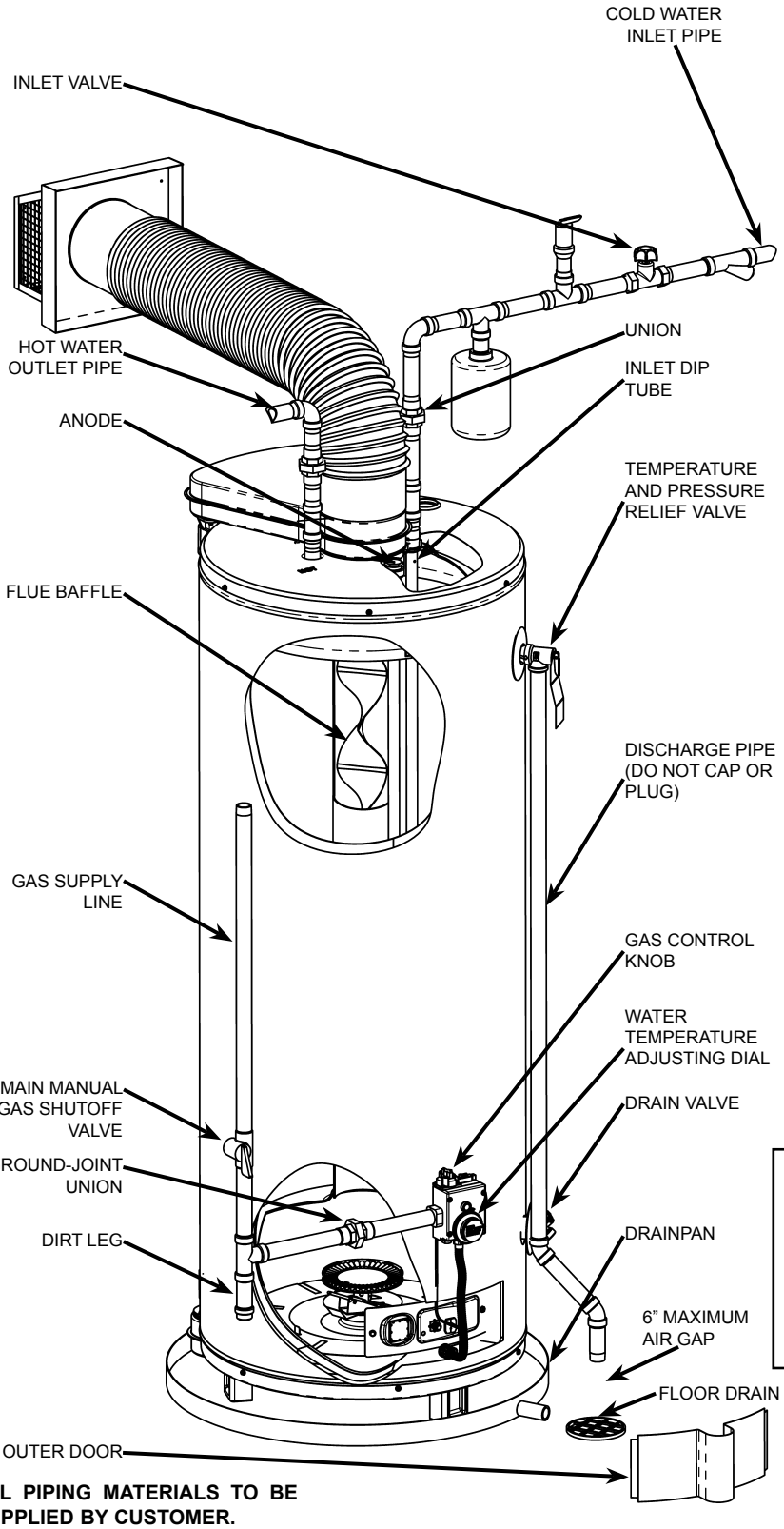
TYPICAL INSTALLATION

GET TO KNOW YOUR WATER HEATER

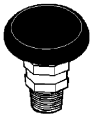
REPLACEMENT PARTS

Replacement parts may be ordered through authorized servicers or distributors. When ordering parts, provide complete model and serial numbers (see rating plate), quantity and name of part desired (as listed in Figure 1). Standard hardware items may be purchased locally.



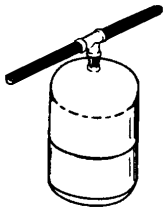
ALL PIPING MATERIALS TO BE SUPPLIED BY CUSTOMER.

VACUUM RELIEF VALVE



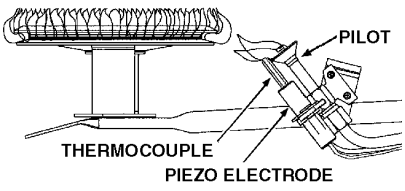
INSTALL PER LOCAL CODES.

THERMAL EXPANSION TANK

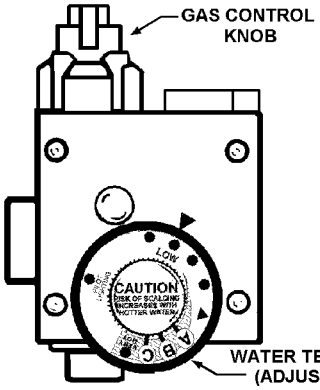


INSTALL THERMAL EXPANSION TANK IF WATER HEATER IS INSTALLED IN A CLOSED SYSTEM.

GAS PILOT & MAIN BURNER



THERMOSTAT



GAS CONTROL

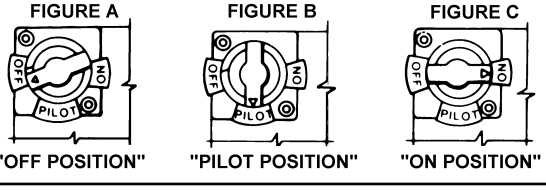


FIGURE 1

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MIXING VALVE USAGE

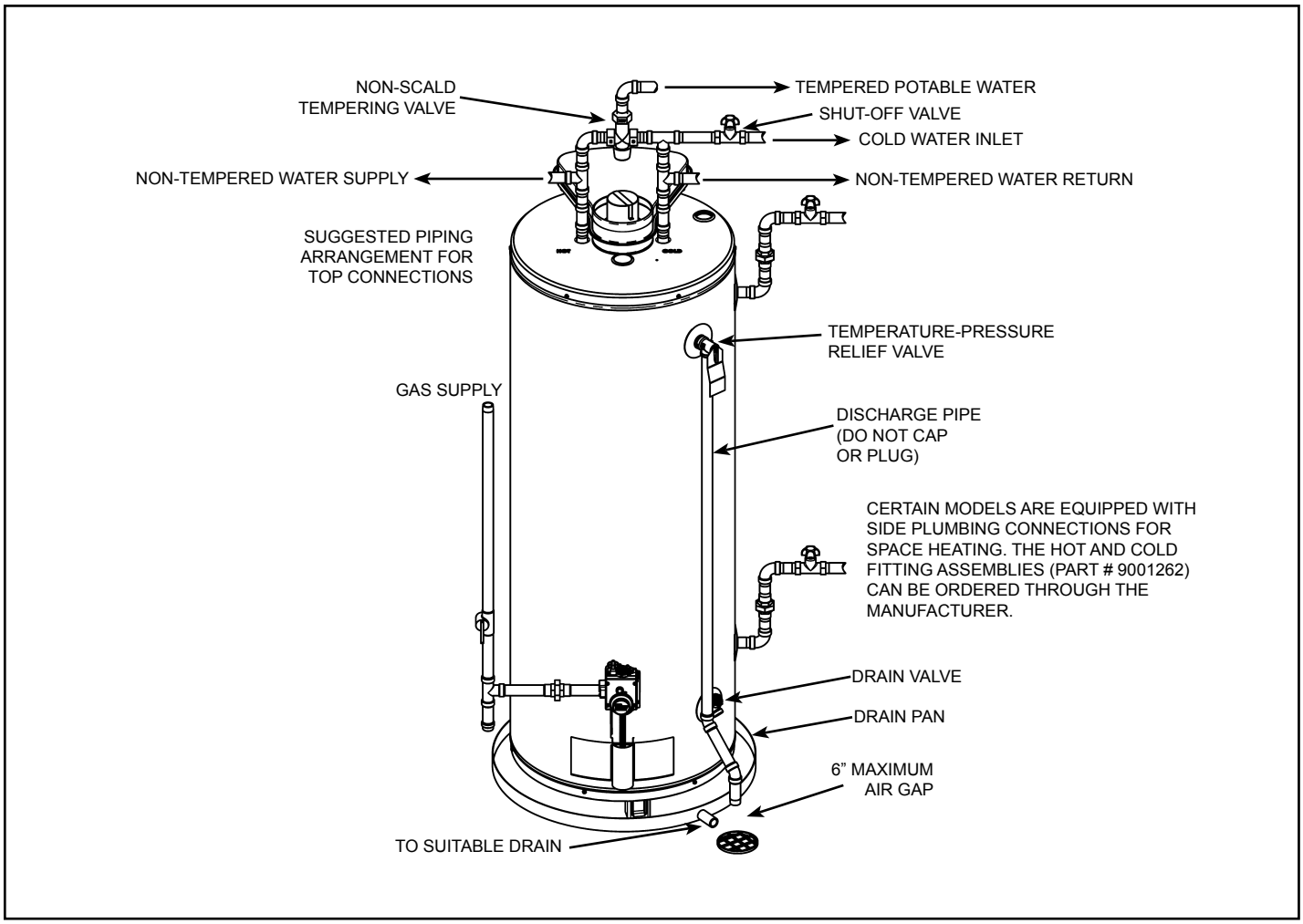
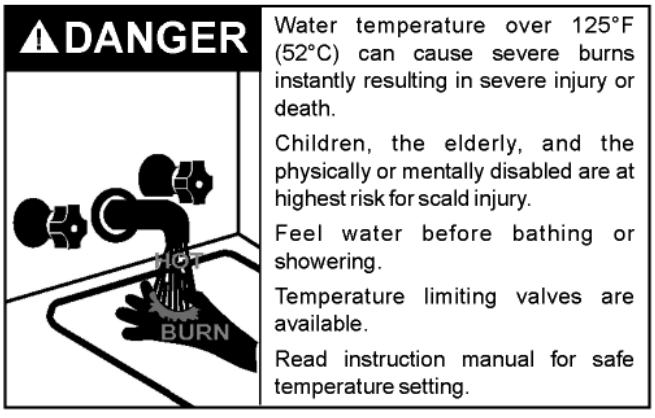


FIGURE 2

This appliance has been design certified as complying with American National Standard/CSA Standard for water heaters and is considered suitable for:

Water (Potable) Heating and Space Heating: All models are considered suitable for water (potable) heating and space heating.


DANGER
Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.
Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.
Feel water before bathing or showering.
Temperature limiting valves are available.
Read instruction manual for safe temperature setting.
HOT
BURN

HOTTER WATER CAN SCALD:

Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a local code or state law requiring a certain temperature water at the hot water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot water needs, a means such as a *Mixing Valve, should be used at the hot water taps used by these people or at the water heater. Mixing valves are available at plumbing supply or hardware stores. Consult a Qualified Installer or Service Agency. Follow mixing valve manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, read the "Temperature Regulation" section in this manual.

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LOCATING THE NEW WATER HEATER

FACTS TO CONSIDER ABOUT THE LOCATION

Carefully choose an indoor location for the new water heater, because the placement is a very important consideration for the safety of the occupants in the building and for the most economical use of the appliance. This water heater is not for use in manufactured (mobile) homes or outdoor installation.

CAUTION

Improper installation and use may result in property damage.

- Do not operate water heater if flood damaged.
- Inspect and replace anode.
- Install in location with drainage.
- Fill tank with water before operation.
- Be alert for thermal expansion.

Refer to instruction manual for installation and service.

Whether replacing an old water heater or putting the water heater in a new location, the following critical points must be observed:

1. Select a location indoors as close as practical to the vent terminal or location to which the water heater vent piping is going to be connected, and as centralized with the water piping system as possible.
2. Selected location must provide adequate clearances for servicing and proper operation of the water heater.

CAUTION

Property Damage Hazard

- All water heaters eventually leak.
- Do not install without adequate drainage.

Installation of the water heater must be accomplished in such a manner that if the tank or any connections should leak, the flow will not cause damage to the structure. For this reason, it is not advisable to install the water heater in an attic or upper floor. When such locations cannot be avoided, a suitable drain pan should be installed under the water heater. Drain pans are available at your local hardware store. Such a drain pan must have a minimum length and width of at least 2 in. (51mm) greater that the water heater dimensions and must be piped to an adequate drain. The pan must not restrict combustion air flow.

Water heater life depends upon water quality, water pressure and the environment in which the water heater is installed. Water heaters are sometimes installed in locations where leakage may result in property damage, even with the use of a drain pan piped to a drain. However, unanticipated damage can be reduced or prevented by a leak detector or water shut-off device used in conjunction with a piped drain pan. These devices are available from some plumbing supply wholesalers and retailers, and detect and react to leakage in various ways:

- Sensors mounted in the drain pan that trigger an alarm or turn off the incoming water to the water heater when leakage is detected.
- Sensors mounted in the drain pan that turn off the water supply to the entire home when water is detected in the drain pan.
- Water supply shut-off devices that activate based on the water pressure differential between the cold water and hot water pipes connected to the water heater.
- Devices that will turn off the gas supply to a gas water heater while at the same time shutting off its water supply.

Also, the water heater must be located and/or protected so it is not subject to physical damage by a moving vehicle.

⚠ WARNING

Fire or Explosion Hazard

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Avoid all ignition sources if you smell LP gas.
- Do not expose water heater control to excessive gas pressure.
- Use only gas shown on rating plate.
- Maintain required clearances to combustibles.
- Keep ignition sources away from faucets after extended period of non-use.

Read instruction manual before installing, using or servicing water heater.

This water heater must not be installed directly on carpeting. Carpeting must be protected by metal or wood panel beneath the appliance extending beyond the full width and depth of the appliance by at least 3 in. (76mm) in any direction, or if the appliance is installed in an alcove or closet, the entire floor must be covered by the panel. Failure to heed this warning may result in a fire hazard.

⚠ WARNING

Fire Hazard

For continued protection against risk of fire:

- Do not install water heater on carpeted floor.
- Do not operate water heater if flood damaged.

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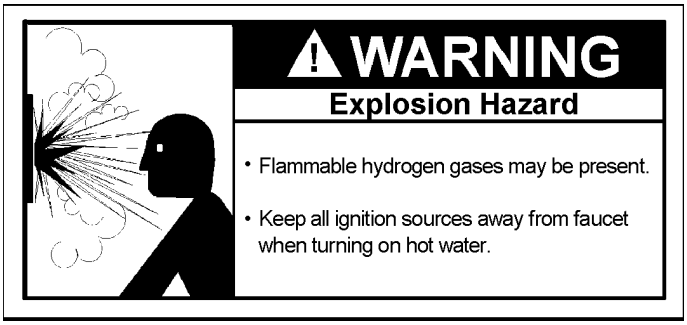
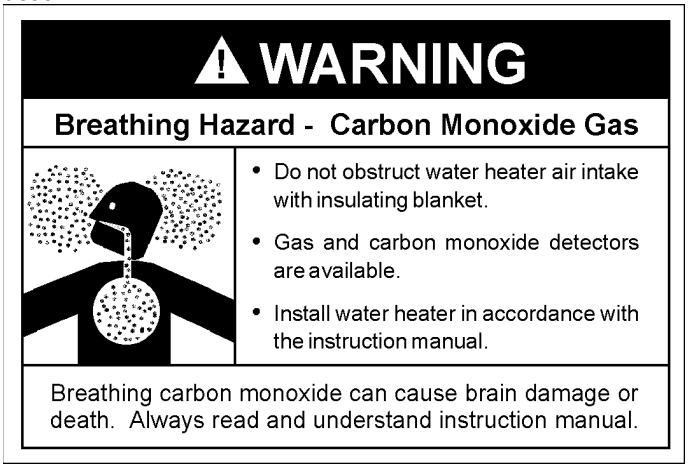

WARNING
Explosion Hazard
• Flammable hydrogen gases may be present.
• Keep all ignition sources away from faucet when turning on hot water.

INSULATION BLANKETS

Insulation blankets available to the general public for external use on gas water heaters are not necessary with this product. The purpose of an insulation blanket is to reduce the standby heat loss encountered with storage tank water heaters. Your Water heater meets or exceeds the National Appliance Energy Conservation Act standards with respect to insulation and standby loss requirements, making an insulation blanket unnecessary.

Should you choose to apply an insulation blanket to this heater, you should follow these instructions (See Figure 1 for identification of components mentioned below). Failure to follow these instructions can restrict the air flow required for proper combustion, resulting in fire, asphyxiation, serious personal injury or death.


WARNING
Breathing Hazard - Carbon Monoxide Gas
• Do not obstruct water heater air intake with insulating blanket.
• Gas and carbon monoxide detectors are available.
• Install water heater in accordance with the instruction manual.
Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

- Do not cover the outer door, thermostat or temperature & pressure relief valve.
- Do not cover the instruction manual. Keep it on the side of the water heater or nearby for future reference.
- Do obtain new warning and instruction labels from the manufacturer for placement on the blanket directly over the existing labels.

VENTILATION FOR APPLIANCES LOCATED IN CONFINED SPACES

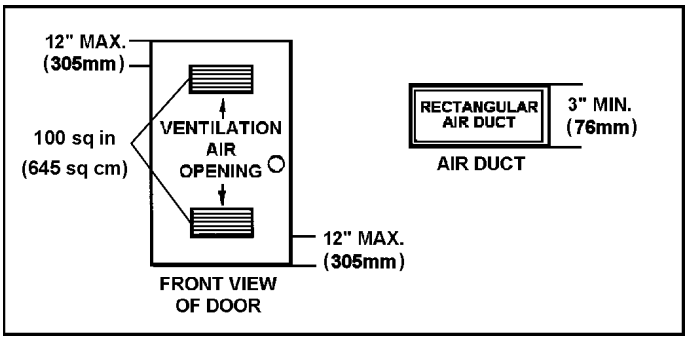


FIGURE 3

Confined Space is a space whose volume is less than 50 cubic feet per 1,000 Btu per hour (4.8 cm per kW) of the aggregate input rating of all appliances installed in that space.

VENT TERMINATION

Before installing water heater determine placement of vent termination.

Make certain to observe vent location limitation, see Figures 3, 4 & 11.

Minimum clearances between the water heater and combustible and noncombustible construction are: 0 in. (0mm) from sides, 0 in. (0mm) from back, 4 in. (102mm) from front of jacket to closet door and 20 in. (508mm) from top of jacket to combustible and noncombustible material. Minimum vent clearance: 1 in. (25mm)*. Provide 3 ft. (915mm) front clearance for servicing and adequate clearance between the jacket top & ceiling for servicing the flue area, see Figure 4.

* Where the wall is combustible and the wall thickness is over 14 in. (356mm), 1 in. (25mm) clearance to combustible materials around the vent terminal is needed. The first 14 in. (356mm) is zero clearance.

WARNING
Fire or Explosion Hazard
Read instruction manual before installing, using or servicing water heater.
• Improper use may result in fire or explosion.
• Maintain required clearances to combustibles.

Make certain the vent locations comply with the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or local codes. There is some important information shown in Figure 11.
For a second or more direct vent unit, the distance between vent terminals must be a minimum of 12 in. (305mm).

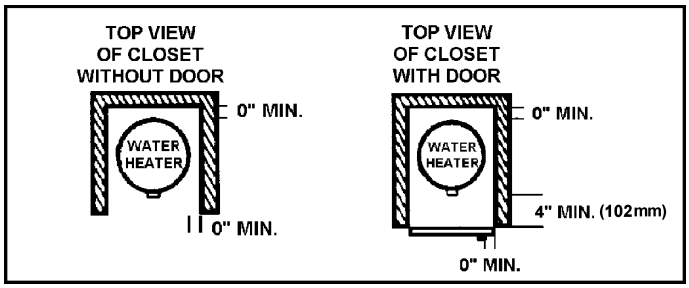


FIGURE 4

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INSTALLING THE NEW WATER HEATER

REQUIRED ABILITY

INSTALLATION OR SERVICE OF THIS WATER HEATER REQUIRES ABILITY EQUIVALENT TO THAT OF A LICENSED TRADESMAN IN THE FIELD INVOLVED. PLUMBING, AIR SUPPLY, VENTING AND GAS SUPPLY ARE REQUIRED.

INSPECT SHIPMENT

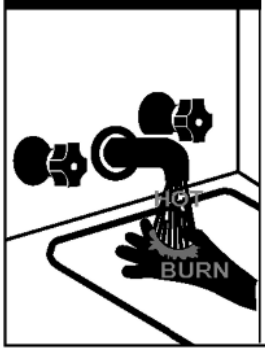
There may be hidden damage caused in transit. Check to be certain all parts of the venting system, as listed below, are present. **CAUTION!!! IF THERE ARE ANY DAMAGED PARTS, DO NOT INSTALL THIS WATER HEATER. REPORT ANY SHORTAGE TO YOUR DISTRIBUTOR OR DAMAGE TO YOUR CARRIER.**

GENERAL

The installation must conform to these instructions and the local code authority having jurisdiction. In the absence of local codes, the installation must comply with the current editions of the National Fuel Gas Code ANSI Z223.1/NFPA 54. The code is available from the Canadian Standards Association, 8501 East Pleasant Valley Road, Cleveland, OH 44131.

WATER PIPING

⚠ DANGER



Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.

Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.

Feel water before bathing or showering.

Temperature limiting valves are available.

Read instruction manual for safe temperature setting.

HOTTER WATER CAN SCALD:
Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, cleaning and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a local code or state law requiring a certain temperature water at the hot water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot water needs, a means such as a *mixing valve, should be used at the hot water taps used by these people or at the water heater, see Figure 2. Valves for reducing point of use temperature by mixing cold and hot water are also available:

Consult a Qualified Installer or Service Agency. Follow manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, read the "Temperature Regulation" section in this manual.

⚠ WARNING

Toxic Chemical Hazard

• Do not connect to non-potable water system.

This water heater shall not be connected to any heating systems or component(s) used with a non-potable water heating appliance.

All piping components connected to this unit for space heating applications shall be suitable for use with potable water.

Toxic chemicals, such as those used for boiler treatment shall not be introduced into this system.

When the system requires water for space heating at temperatures higher than required for domestic water purposes, a tempering valve must be installed. Please refer to Figure 2 for suggested piping arrangement.

Water supply systems may, because of such events as high line pressure, frequent cut-offs, the effects of water hammer among others, have installed devices such as pressure reducing valves, check valves, back flow preventers, etc. to control these types of problems. When these devices are not equipped with an internal by-pass, and no other measures are taken, the devices cause the water system to be closed. As water is heated, it expands (thermal expansion) and closed systems do not allow for the expansion of heated water.

The water within the water heater tank expands as it is heated and increases the pressure of the water system. If the relieving point of the water heater's temperature-pressure relief valve is reached, the valve will relieve the excess pressure. **The temperature-pressure relief valve is not intended for the constant relief of thermal expansion.** This is an unacceptable condition and must be corrected.

It is recommended that any devices installed which could create a closed system have a by-pass and/or the system have an expansion tank to relieve the pressure built by thermal expansion in the water system. Expansion tanks are available for ordering through a local plumbing contractor. Contact the local water supplier and/or a service agency for assistance in controlling these situations.

NOTE: To protect against untimely corrosion of hot and cold water fittings, it is strongly recommended that di-electric unions or couplings be installed on this water heater when connected to copper pipe.

All gas piping must comply with local codes and ordinances or with the National Fuel Gas Code ANSI Z223.1/NFPA 54 whichever applies. Copper and brass tubing and fittings (except tin lined copper tubing) shall not be used.

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CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Install thermal expansion tank if necessary.
- Do not apply heat to cold water inlet.
- Contact qualified installer or service agency.

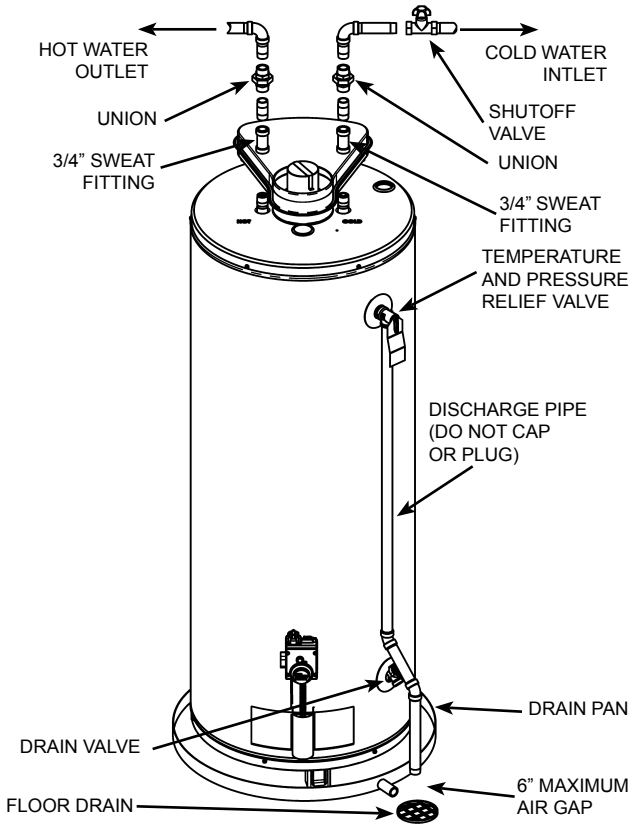


FIGURE 5

Figure 5 shows the typical attachment of the water piping to the water heater. The water heater is equipped with 3/4" NPT water connections.

NOTE: If using copper tubing, solder tubing to an adapter before attaching the adapter to the cold water inlet connection. Do not solder the cold water supply line directly to the cold water inlet. It will harm the dip tube and damage the tank.

T & P VALVE AND PIPE INSULATION (IF SUPPLIED)

Remove insulation for T & P valve and pipe connections from carton.

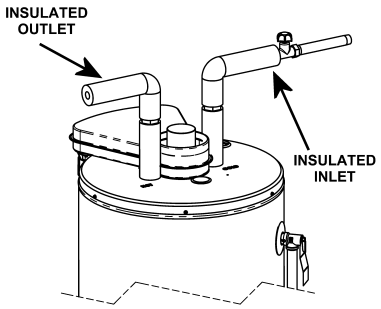
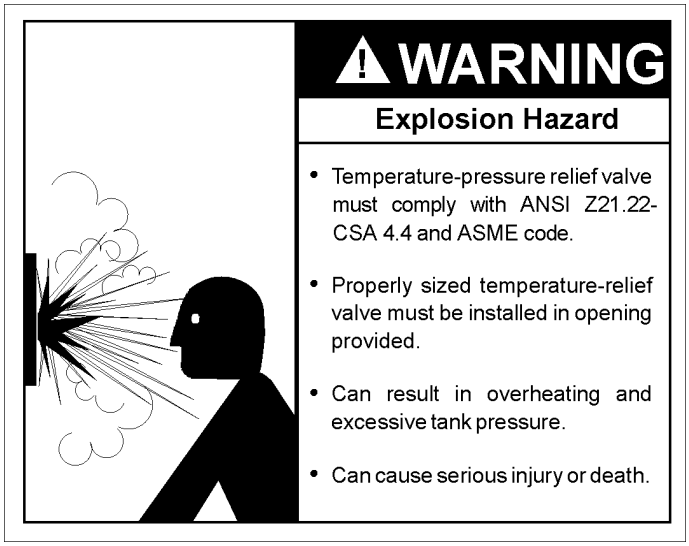


FIGURE 6

Fit pipe insulation over the incoming cold water line and the hot water line. Make sure that the insulation is against the top cover of the heater.
Fit T & P valve insulation over valve. Make sure that the insulation does not interfere with the lever of the T & P valve.

Secure all insulation using tape.

TEMPERATURE-PRESSURE RELIEF VALVE


WARNING
Explosion Hazard
• Temperature-pressure relief valve must comply with ANSI Z21.22-CSA 4.4 and ASME code.
• Properly sized temperature-relief valve must be installed in opening provided.
• Can result in overheating and excessive tank pressure.
• Can cause serious injury or death.

This heater is provided with a properly certified combination temperature - pressure relief valve by the manufacturer.

The valve is certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment of materials as meeting the requirements for Relief Valves for Hot Water Supply Systems, ANSI Z21.22 • CSA 4.4, and the code requirements of ASME.

If replaced, the valve must meet the requirements of local codes, but not less than a combination temperature and pressure relief valve certified as indicated in the above paragraph.
The valve must be marked with a maximum set pressure not to exceed the marked hydrostatic working pressure of the water heater (150 psi = 1,035 kPa) and a discharge capacity not less than the water heater input rate as shown on the model rating plate.

For safe operation of the water heater, the relief valve must not be removed from its designated opening nor plugged.

The temperature-pressure relief valve must be installed directly into the fitting of the water heater designed for the relief valve. Position the valve downward and provide tubing so that any discharge will exit only within 6 in. (152mm) above, or at any

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distance below the structural floor. Be certain that no contact is made with any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances. Excessive length, over 30 ft. (9.14m), or use of more than four elbows can cause restriction and reduce the discharge capacity of the valve, see Figures 5 or 10.

No valve or other obstruction is to be placed between the relief valve and the tank. Do not connect tubing directly to discharge drain unless a 6 in. (152mm) air gap is provided. To prevent bodily injury, hazard to life, or property damage, the relief valve must be allowed to discharge water in quantities should circumstances demand. If the discharge pipe is not connected to a drain or other suitable means, the water flow may cause property damage.

CAUTION

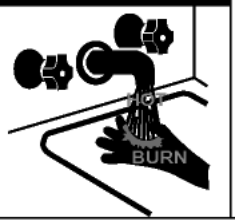
Water Damage Hazard

- Temperature-pressure relief valve discharge pipe must terminate at adequate drain.

The Discharge Pipe:

- Shall not be smaller in size than the outlet pipe size of the valve, or have any reducing couplings or other restrictions.
- Shall not be plugged or blocked.
- Shall be of material listed for hot water distribution.
- Shall be installed so as to allow complete drainage of both the temperature-pressure relief valve, and the discharge pipe.
- Shall terminate at an adequate drain.
- Shall not have any valve between the relief valve and tank.

DANGER



- Burn hazard.
- Hot water discharge.
- Keep hands clear of drain valve discharge.

The temperature-pressure relief valve must be manually operated at least once a year. Caution should be taken to ensure that (1) no one is in front of or around the outlet of the temperature-pressure relief valve discharge line, and (2) the water manually discharged will not cause any bodily injury or property damage because the water may be extremely hot.

If after manually operating the valve, it fails to completely reset and continues to release water, immediately close the cold water inlet to the water heater, follow the draining instructions, and replace the temperature-pressure relief valve with a new one.

WATER (POTABLE) HEATING AND SPACE HEATING

1. All piping components connected to this unit for space heating applications shall be suitable for use with potable water.
2. Toxic chemicals, such as those used for boiler treatment, shall NEVER be introduced into this system.
3. This unit may NEVER be connected to any existing heating system or component(s) previously used with a non-potable water heating appliance.
4. When the system requires water for space heating at temperatures higher than required for domestic water purposes, a tempering valve must be installed, see Figure 7 for suggested piping arrangement.

WARNING

Toxic Chemical Hazard

- Do not connect to non-potable water system.

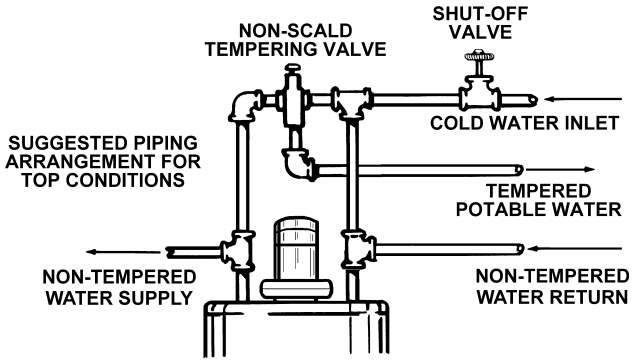


FIGURE 7

CLOSED WATER SYSTEM

A closed system will exist if a back-flow preventer (check valve), pressure reducing valve, or other similar device is installed in the cold water line between the water heater and the street main (or well). Excessive pressure may develop due to the thermal expansion of heated water causing premature tank failure or intermittent relief valve operation. This type of failure is not covered by the limited warranty. An expansion tank may be necessary in the cold water supply to alleviate this situation, see Figure 1. Contact the local plumbing authority.

If the temperature and pressure relief valve on the appliance discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. DO NOT PLUG THE TEMPERATURE AND PRESSURE RELIEF VALVE.

GAS PIPING

WARNING

Fire and Explosion Hazard

- Do not use water heater with any gas other than the gas shown on the rating plate.
- Excessive pressure to gas control valve can cause serious injury or death.
- Turn off gas lines during installation.
- Contact qualified installer or service agency.

Make sure the gas supplied is the same type listed on the model rating plate. The inlet gas pressure must not exceed 14 inch water column (3.5 kPa) for natural and propane gas (L.P.). The

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minimum inlet gas pressure shown on the rating plate is that which will permit firing at rated input.

All gas piping must comply with local codes and ordinances or with the National Fuel Gas Code ANSI Z223.1/NFPA 54 whichever applies. Copper and brass tubing and fittings (except tin lined copper tubing) shall not be used.

If the gas control valve is subjected to pressures exceeding 1/2 psi (3.5 kPa), the damage to the gas control valve could result in a fire or explosion from leaking gas.

If the main gas line Shut-off serving all gas appliances is used, also turn “off” the gas at each appliance. Leave all gas appliances shut “off” until the water heater installation is complete.

A gas line of sufficient size must be run to the water heater. Consult the current edition of National Fuel Gas Code ANSI Z223.1/NFPA 54 and your gas supplier concerning pipe size.

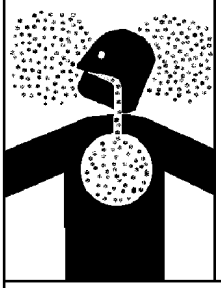
There must be:

- A readily accessible manual shut off valve in the gas supply line serving the water heater, and
- A drip leg (sediment trap) ahead of the gas control valve to help prevent dirt and foreign materials from entering the gas control valve.
- A flexible gas connector or a ground joint union between the shut off valve and control valve to permit servicing of the unit.

Be sure to check all the gas piping for leaks before lighting the water heater. Use a soapy water solution, not a match or open flame. Rinse off soapy solution and wipe dry.

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas

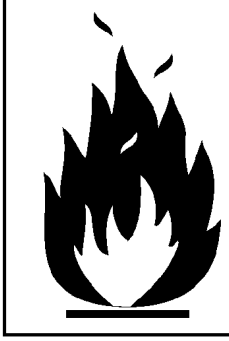


- Flue gases may escape if vent pipe is not connected.
- Be alert for obstructed, sooted or deteriorated vent system to avoid serious injury or death.
- Do not store corrosive chemicals in vicinity of water heater.
- Chemical corrosion of flue and vent system can cause serious injury or death.

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

When installed at elevations above 7,700 feet (2,347 meters), input rating should be reduced at the rate of 4 percent for each 1,000 feet (305 meters) above sea level which requires replacement of the burner orifice in accordance with National Fuel Gas Code ANSI Z223.1/NFPA 54. Contact your local gas supplier for further information.

Failure to replace the standard orifice with a high altitude orifice when installed could result in improper and inefficient operation of the appliance, producing carbon monoxide gas in excess of safe limits, which could result in serious injury or death. Contact your gas supplier for any specific changes which may be required in your area.



⚠ WARNING

Fire and Explosion Hazard

- Use joint compound or tape compatible with propane.
- Leak test before operating heater.
- Disconnect gas piping and shut-off valve before pressure testing system.

Use pipe joint compound or teflon tape marked as being resistant to the action of petroleum [Propane (L.P.)] gases.

The appliance and its gas connection must be leak tested before placing the appliance in operation.

The appliance and its individual Shut-off valve shall be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 pound per square inch (3.5 kPa). It shall be isolated from the gas supply piping system by closing its individual manual Shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 pound per square inch (3.5 kPa).

Connecting the gas piping to the gas control valve of the water heater can be accomplished by either of the two methods shown in Figures 8 and 9.

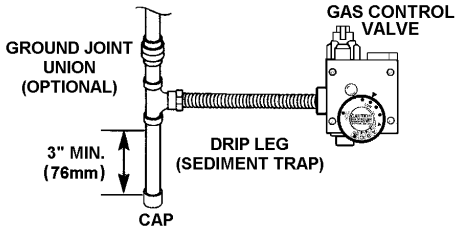


FIGURE 8 GAS PIPING WITH FLEXIBLE CONNECTOR.

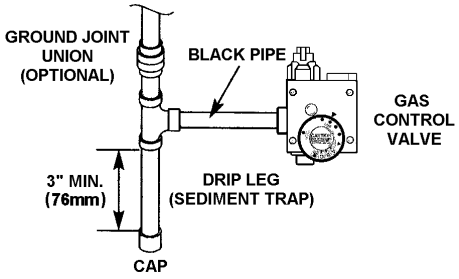


FIGURE 9 GAS PIPING WITH ALL BLACK IRON PIPE TO GAS CONTROL.

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SEDIMENT TRAPS

⚠ WARNING

Fire and Explosion Hazard

- Contaminants in gas lines can cause fire or explosion.
- Clean all gas piping before installation.
- Install drip leg in accordance with NFPA 54.

A sediment trap shall be installed as close to the inlet of the water heater as practical at the time of water heater installation. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet or other device recognized as an effective sediment trap. If a tee fitting is used, it shall be installed in conformance with one of the methods of installation shown in Figures 8 and 9.

Contaminants in the gas lines may cause improper operation of the gas control valve that may result in fire or explosion. Before attaching the gas line be sure that all gas pipe is clean on the inside. To trap any dirt or foreign material in the gas supply line, a drip leg (sometimes called a sediment trap) must be incorporated in the piping. The drip leg must be readily accessible. Install in accordance with the "Gas Piping" section. Refer to the current edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54.

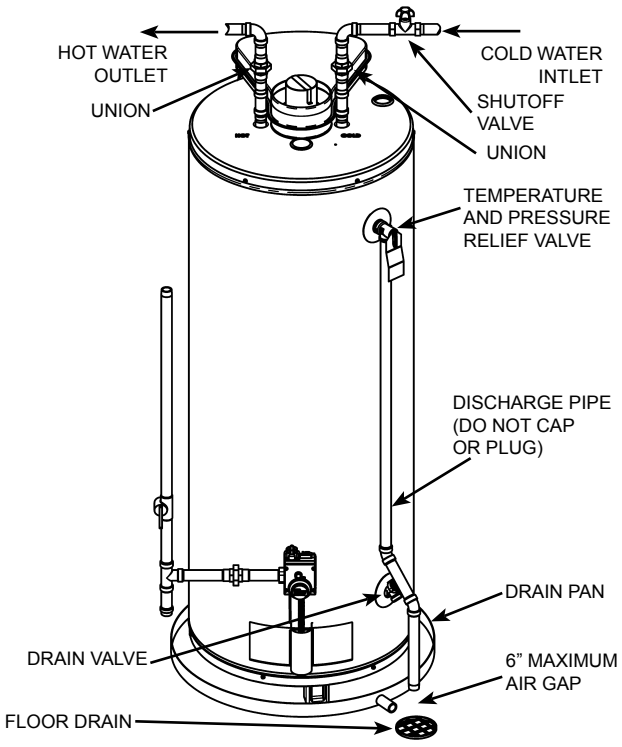

FIGURE 10

FILLING THE WATER HEATER

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Fill tank with water before operating.

Never use this water heater unless it is completely full of water. To prevent damage to the tank, the tank must be filled with water. Water must flow from the hot water faucet before turning "ON" gas to the water heater.

To fill the water heater with water:

1. Close the water heater drain valve by turning the handle to the right (clockwise). The drain valve is on the lower front of the water heater.
2. Open the cold water supply valve to the water heater. NOTE: The cold water supply valve must be left open when the water heater is in use.
3. To insure complete filling of the tank, allow air to exit by opening the nearest hot water faucet. Allow water to run until a constant flow is obtained. This will let air out of the water heater and the piping.
4. Check all water piping and connections for leaks. Repair as needed.

VENTING

NEVER OPERATE THE HEATER UNLESS IT IS VENTED TO THE OUTDOORS AND HAS ADEQUATE AIR SUPPLY TO AVOID RISKS OF IMPROPER OPERATION, FIRE, EXPLOSION OR ASPHYXIATION.

DO NOT OBSTRUCT THE FLOW OF COMBUSTION AND VENTILATING AIR. ADEQUATE AIR FOR COMBUSTION AND VENTILATION MUST BE PROVIDED FOR SAFE OPERATION.

HIGH ALTITUDE INSTALLATIONS

Installations above 7,700 ft. (2347 m) require replacement of the burner orifice in accordance with the National Fuel Gas Code ANSI Z223.1/NFPA 54. Failure to replace the orifice could result in improper and inefficient operation of the appliance, producing carbon monoxide gas in excess of safe limits, which could result in serious personal injury or death. Contact your gas supplier for any specific changes which may be required in your area.

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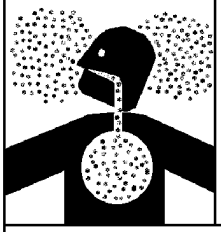
⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- High altitude orifice must be installed for operation above 7,700 ft (2,347 m).
- Contact a qualified installer or service agency.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

⚠ WARNING

Fire or Explosion Hazard

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Avoid all ignition sources if you smell LP gas.
- Do not expose water heater control to excessive gas pressure.
- Use only gas shown on rating plate.
- Maintain required clearances to combustibles.
- Keep ignition sources away from faucets after extended period of non-use.

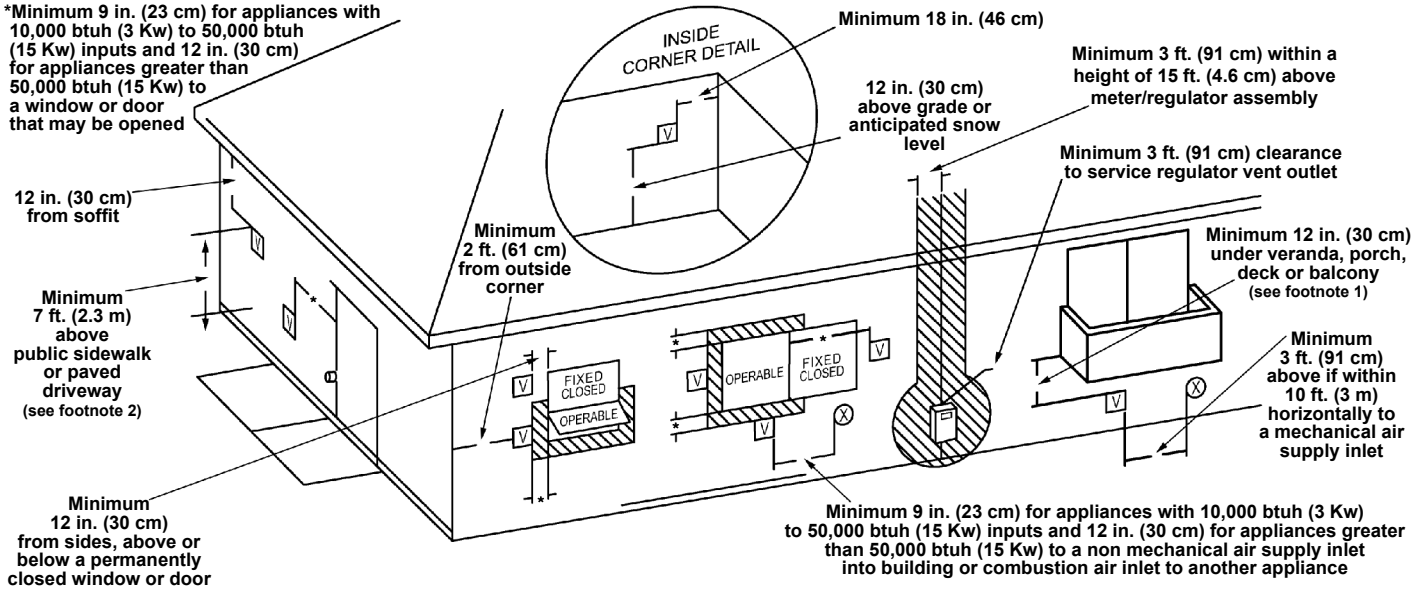
Read instruction manual before installing, using or servicing water heater.

COMBUSTION AIR AND VENTILATION

When determining the installation location for a direct vent water heater, snow accumulation and drifting should be considered in areas where applicable.

VENT TERMINAL CLEARANCES

The vent system must terminate so that proper clearances are maintained as cited in local codes or the current edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54 as follows:


*Minimum 9 in. (23 cm) for appliances with 10,000 btuh (3 Kw) to 50,000 btuh (15 Kw) inputs and 12 in. (30 cm) for appliances greater than 50,000 btuh (15 Kw) to a window or door that may be opened
INSIDE CORNER DETAIL
Minimum 18 in. (46 cm)
12 in. (30 cm) above grade or anticipated snow level
Minimum 3 ft. (91 cm) within a height of 15 ft. (4.6 cm) above meter/regulator assembly
Minimum 3 ft. (91 cm) clearance to service regulator vent outlet
12 in. (30 cm) from soffit
Minimum 2 ft. (61 cm) from outside corner
Minimum 12 in. (30 cm) under veranda, porch, deck or balcony (see footnote 1)
Minimum 7 ft. (2.3 m) above public sidewalk or paved driveway (see footnote 2)
FIXED CLOSED
OPERABLE
OPERABLE
FIXED CLOSED
Minimum 3 ft. (91 cm) above if within 10 ft. (3 m) horizontally to a mechanical air supply inlet
Minimum 12 in. (30 cm) from sides, above or below a permanently closed window or door
Minimum 9 in. (23 cm) for appliances with 10,000 btuh (3 Kw) to 50,000 btuh (15 Kw) inputs and 12 in. (30 cm) for appliances greater than 50,000 btuh (15 Kw) to a non mechanical air supply inlet into building or combustion air inlet to another appliance

V VENT TERMINAL X AIR SUPPLY INLET AREA WHERE TERMINAL IS NOT PERMITTED

1. Permitted only if veranda, porch, deck or balcony is fully opened on a minimum of two sides beneath the floor.
2. A vent shall not terminate above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

FIGURE 11

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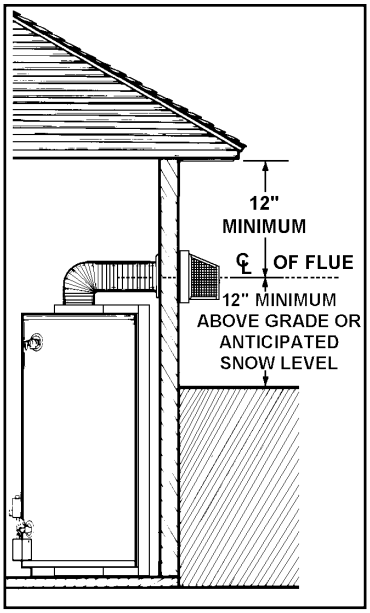
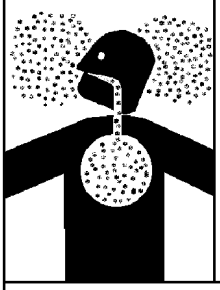


FIGURE 12

Be sure venting is properly connected to prevent escape of dangerous flue gases which could cause deadly asphyxiation.

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- Flue gases may escape if vent pipe is not connected.
- Be alert for obstructed, sooted or deteriorated vent system to avoid serious injury or death.
- Do not store corrosive chemicals in vicinity of water heater.
- Chemical corrosion of flue and vent system can cause serious injury or death.

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

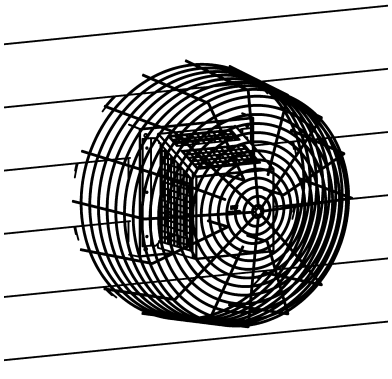


FIGURE 13

VENT CONNECTIONS

After the location for the vent terminal has been selected as outlined in Figures 3, 4 & 11, use the following illustrations for installation:

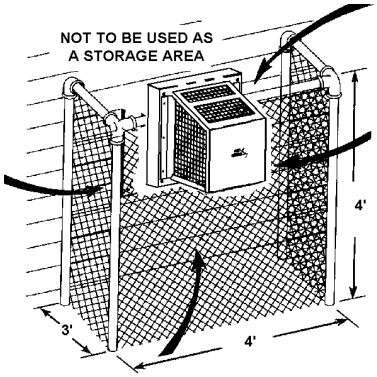


FIGURE 14

LOCATING CLEARANCE HOLE FOR VENT

Cut a clearance hole, approximately 7 in. (178mm) in diameter, through the exterior wall for the vent assembly. The minimum height should not be less than 68 in. (1.72m) for 40 gal. models and not less than 76 in. (1.93m) for 50 gal. and 50 gal. Hi-Input models, as measured from the hole center to bottom of water heater. The maximum height recommended is 80 in. (2.03m) or in compliance with Figure 16.

Where the wall is combustible and the wall thickness is over 14 in. (356mm), 1 in. (25mm) clearance to combustible materials around the vent terminal is needed. The first 14 in. (356mm) is zero clearance.

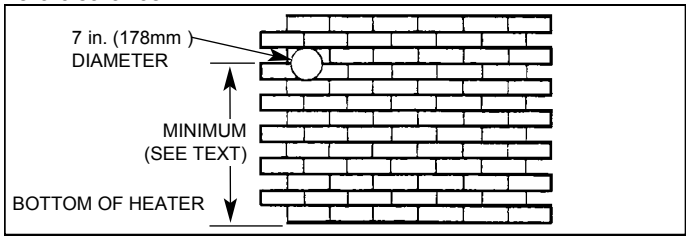


FIGURE 15

HIGH RISE VENT ARRANGEMENT

When the height H (From vent terminal center line to bottom of heater) is over 80 in. (2.03m), it is a high rise vent arrangement. In this case the minimum distance “D” from the center of the water heater to the outside wall surface is 22 in. (560mm), and the maximum height of “H” is 12 ft. (3.66m).

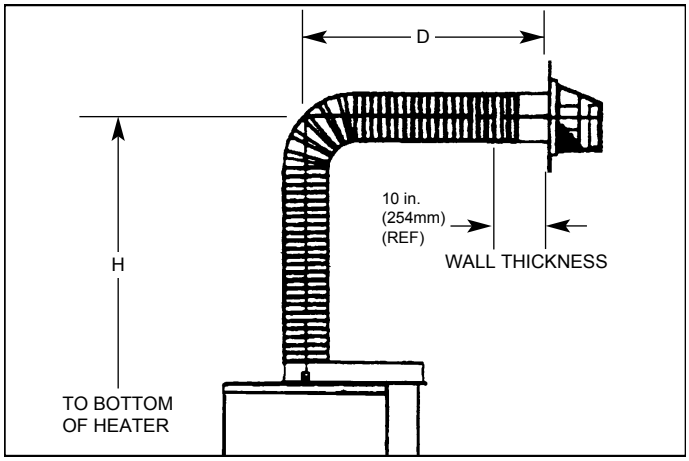


FIGURE 16

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STANDARD VENT ARRANGEMENT

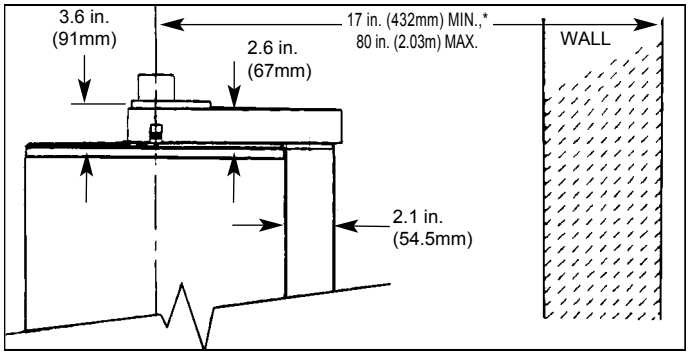

FIGURE 17

* If the horizontal distance is less than 30 in. (760mm), the restricter plate must be installed (see Figure 22).

VENT ASSEMBLY

The vent tube and terminal are assembled by the manufacturer as shown in Figure 18. There are springs fastened inside the corrugated tube. When the vent tubes are pulled to a required length, the distances between the springs will still be equally spaced.

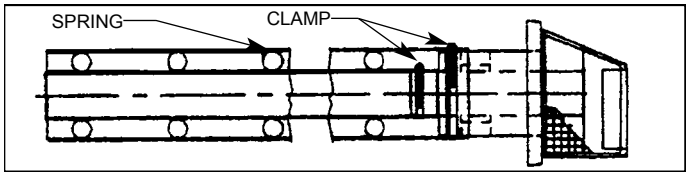

FIGURE 18

SECURING VENT TERMINATION ASSEMBLY TO THE EXTERIOR WALL.

Insert the 6 in. (52mm) tube through the clearance hole from exterior wall then secure the vent terminal to the exterior wall with 4 screw anchors (not included) appropriate for the type of wall construction. Caulk the junction of the vent terminal base plate and the exterior wall with exterior type sealant (not included).

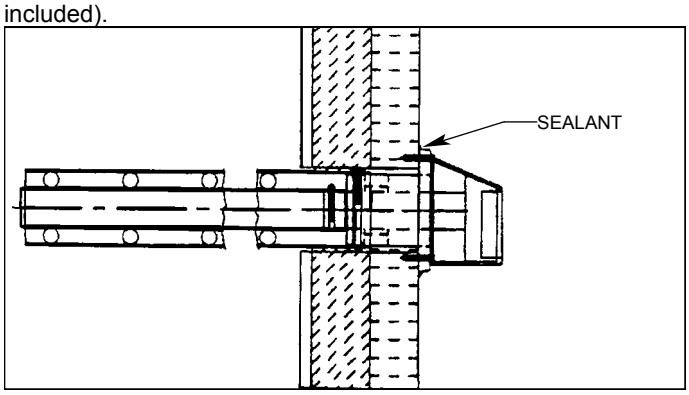

FIGURE 19

UNCOMPRESSING THE CORRUGATED TUBING

1. Pull the 3-1/8 in. (80mm) corrugated tube towards the water heater and leave some length over the water heater's center for bending.
2. Pull the 6 in. (152mm) corrugated tube toward the water heater and leave it 1 in. (25mm) shorter than 3-1/8 in. (80mm) tube.
3. Make sure there are two springs evenly spaced at the bend in the tube.
4. Use metal hangers to keep venting level or with a slope upward from the heater to terminal.

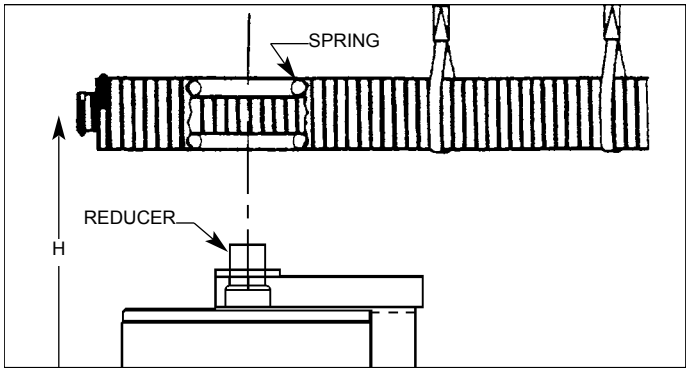

FIGURE 20

Bend the 3-1/8 in. (80mm) and 6 in. (152mm) corrugated tube all together toward the water heater's flue connection.

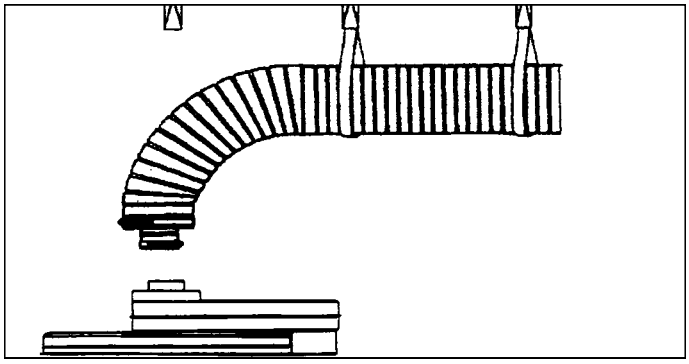

FIGURE 21

VENT RESTRICTER PLATE

For short horizontal vent runs (see Figure 17) place the restricter plate over the flue tube reducer before connecting the 3-1/8 in. (80mm) corrugated tube to the flue tube reducer. DO NOT use the restricter plate if the horizontal run is greater than 30 in. (760mm).

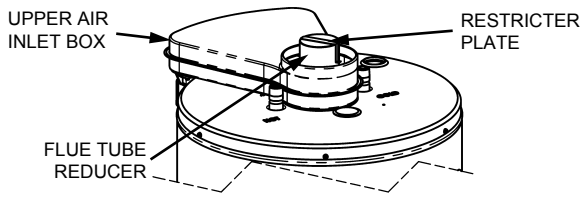

FIGURE 22

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Pull and connect the 3-1/8 in. (80mm) corrugated tube to the water heater's flue tube reducer with hi-temp red silicone (included) and gear clamp. Make sure this connection is tight and leak proof.
*The sealant between 3-1/8 in. (80mm) corrugated tube and water heater's flue tube reducer must be hi-temp red silicone or other material suitable for 600°F (315°C) continuous service.

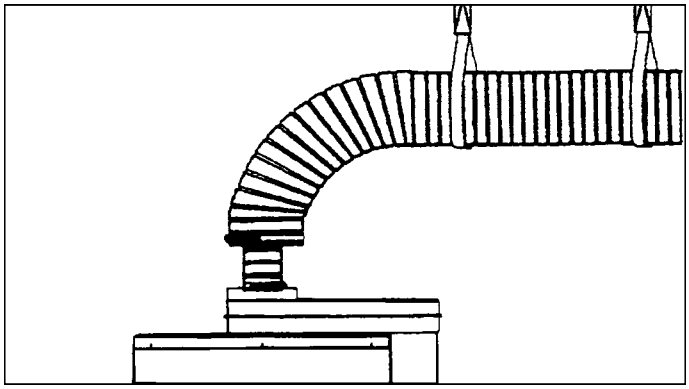

FIGURE 23

Apply hi-temp red silicone (included) around 6 in. (152mm) collar on air manifold box. Pull corrugated vent tube all the way on to collar and secure with one sheet metal screw (approx. 3/4 in. (19mm) up from edge of vent tube. Pull gear clamp past screw and tighten.

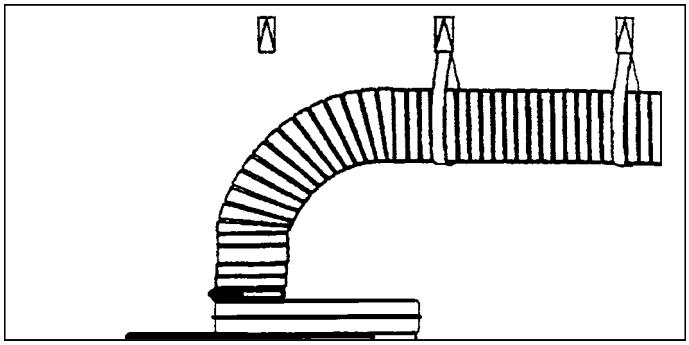

FIGURE 24

Check the level or slope of the venting again, and adjust if required.

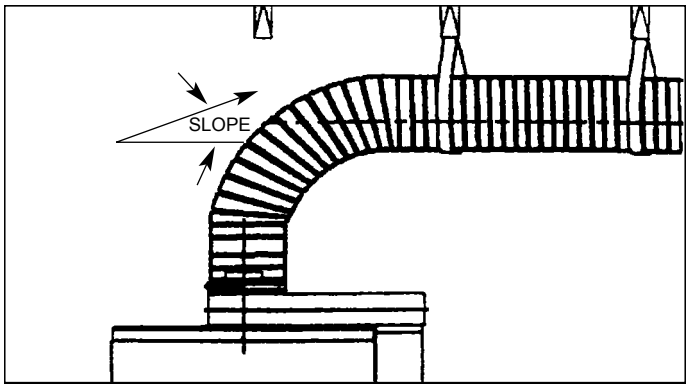

FIGURE 25

OFFSET VENT ARRANGEMENT

CONDITION 1:
Where a straight vent arrangement is impossible, a horizontal 90 degree maximum bend can be made. Use the water heater casing outer diameter as a template to form the corrugated tube.

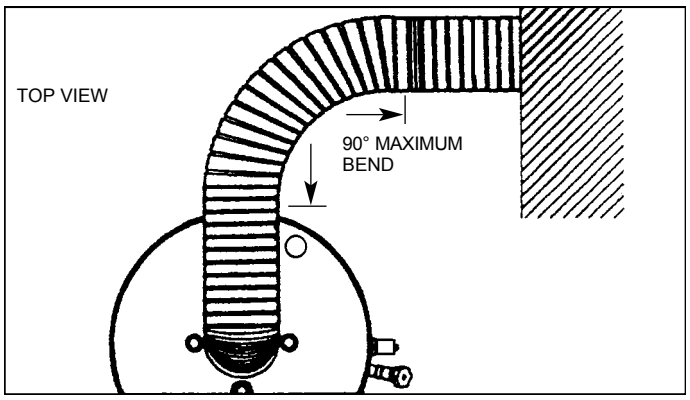

FIGURE 26

CONDITION 2:
Where floor joists impede venting, a rise to complete the vent termination is possible. All installations require 1 in. (25mm) clearance to combustibles.
Note:
A. The maximum horizontal vent length of 80 in. (2.03m) minus wall thickness should be considered when installing an offset vent arrangement.
B. **Do not combine condition 1 (Figure 26) with condition 2 (Figures 27 & 28) in the same installation.**
C. The maximum allowable drop from vent center-line to vent termination center-line (Figure 28) is 7.25 in. (184mm).

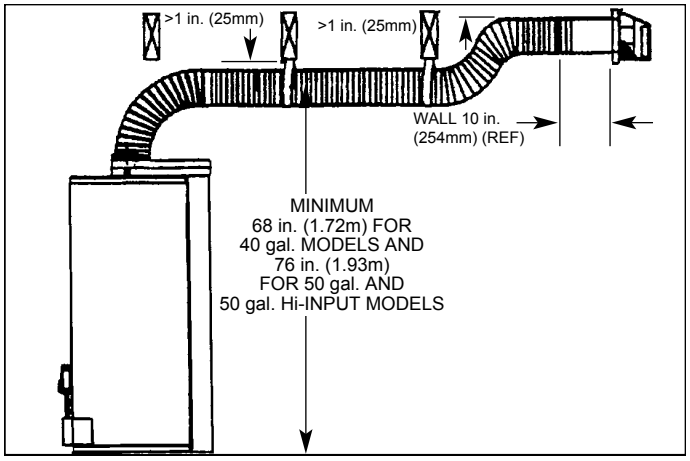

FIGURE 27

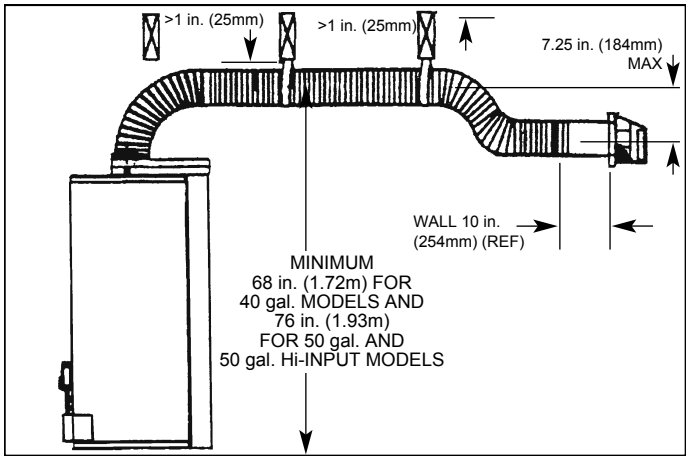

FIGURE 28

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FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

FLAMMABLE

BEFORE LIGHTING: ENTIRE SYSTEM MUST BE FILLED WITH WATER AND AIR PURGED FROM ALL LINES

A. This appliance has a pilot which is lit by a piezo-electric spark gas ignition system. Do not open the inner door of the appliance and try to light the pilot by hand.

B. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

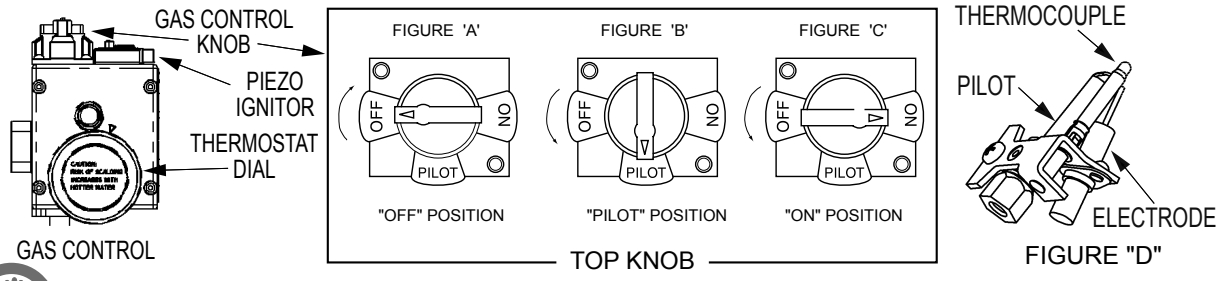
WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been underwater. Immediately contact a qualified installer or service agency to replace a flooded water heater.Do not attempt to repair the unit! It must be replaced!

LIGHTING INSTRUCTIONS



1. **STOP!** Read the safety information above on this label.
2. Set the thermostat to lowest setting (PILOT LIGHTING). Turn thermostat dial fully clockwise ↷ until it stops.
3. Push the gas control knob down slightly and turn clockwise ↷ to "OFF". SEE FIGURE 'A'. NOTE: Knob cannot be turned from "PILOT" to "OFF" unless knob is pushed down slightly. Do not force.
4. Remove the outer burner door located below the gas control.
5. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
6. This unit is equipped with a push button pilot ignitor, which is used to light the pilot. Locate the ignitor on the gas control.
7. Turn gas control knob counterclockwise ↶ to "PILOT". SEE FIGURE 'B'.
8. The pilot is located on the left side of the burner. It can be located by looking through the glass view port while pressing the piezo ignitor button several times. Look for a spark at the pilot location, Figure "D".
9. Once the pilot has been found, push the gas knob all the way down. Immediately press and release the pilot ignitor button continuously up to (10) times. If the pilot will not light, repeat steps (3) through (9).
10. Continue to hold the gas control knob down for about one (1) minute after the pilot is lit. Release the gas control knob and it will pop back up. Pilot should remain lit. If it goes out, repeat step (9). It may take several minutes for air to clear the lines before the pilot will light.
    - If knob does not pop up when released, stop and immediately call your service technician or gas supplier.
    - If the pilot will not stay lit after several tries, turn the gas control knob clockwise ↷ to 'OFF' and call your service technician or gas supplier. SEE FIGURE 'A'.
11. Once the pilot flame is established replace the outer burner door.
12. At arm's length away, turn gas control knob counterclockwise ↶ to 'ON'. SEE FIGURE 'C'.
13. Set thermostat to desired setting.

DANGER: Hotter water increases the risk of scald injury. Consult the instruction manual before changing temperature.

TO TURN OFF GAS TO APPLIANCE

1. Turn the thermostat dial to lowest setting (PILOT LIGHTING).
2. Push gas control knob down slightly and turn clock-wise ↷ to 'OFF'. Do not force. SEE FIGURE 'A'.

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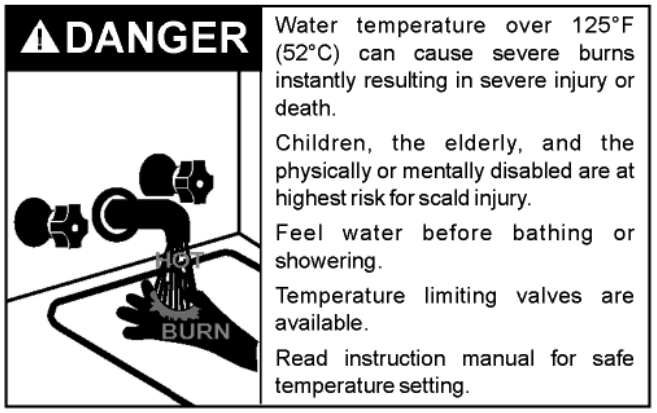
TEMPERATURE REGULATION


DANGER
Water temperature over 125°F (52°C) can cause severe burns instantly resulting in severe injury or death.
Children, the elderly, and the physically or mentally disabled are at highest risk for scald injury.
Feel water before bathing or showering.
Temperature limiting valves are available.
Read instruction manual for safe temperature setting.
HOT
BURN

HOT WATER CAN SCALD: Water heaters are intended to produce hot water. Water heated to a temperature that will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm, or physically/mentally handicapped. If anyone using hot water in your home fits into one of these groups or if there is a provincial, state law or local code requiring a specific hot water temperature at the tap, then you must take special precautions. Never allow small children to use a hot water tap, or to draw their own bath water. Never leave a child or handicapped person unattended in a bathtub or shower.

It is recommended that lower water temperatures be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature be set for the lowest temperature that satisfies your hot water needs. This will also provide the most energy efficient operation of the water heater.

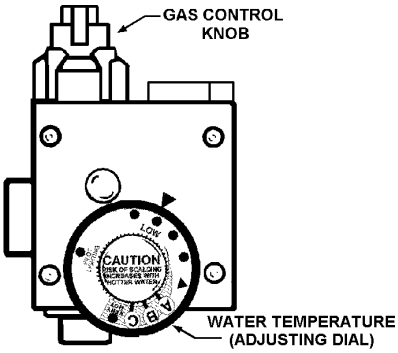
Figure 29 shows the approximate water temperatures produced at various thermostat dial settings. Short repeated heating cycles caused by small hot water uses can cause temperatures at the point of use to exceed the thermostat setting by up to 30°F (17°C). If you experience this type of use you should consider using lower temperature settings to reduce scald hazards.

Valves for reducing point-of-use temperature by mixing cold and hot water are available (see Figures 2 & 7). Also available are inexpensive devices that attach to faucets to limit hot water temperatures. Contact a licensed plumber or the local plumbing authority.

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, TURN OFF THE MAIN MANUAL GAS CONTROL VALVE TO THE APPLIANCE (SEE FIGURE 1).

NOTE: A water temperature range of 120°F-140°F (49°C-60°C) is recommended by most dishwasher manufacturers. The thermostat of this water heater has been factory set at its lowest position (PILOT LIGHTING). It is adjustable and must be reset to the desired temperature setting to reduce the risk of scald injury. The mark (▲) indicative of approximately 120°F (49°C) is preferred starting point. Some provinces may have a requirement for a lower setting.

Turn the water temperature dial clockwise (↷) to decrease the temperature, or counterclockwise (↶) to increase the temperature.



Temperature Setting	Time to Produce 2nd & 3rd Degree Burns on Adult Skin
VERY HOT= approx. 160°F	About 1/2 second
C = approx. 150°F	About 1-1/2 seconds
B = approx. 140°F	Less than 5 seconds
A = approx. 130°F	About 30 seconds
▲ = approx. 120°F	More than 5 minutes
LOW = approx. 80°F	----------

FIGURE 29

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FOR YOUR INFORMATION

EXTERNAL DAMAGE

Do not operate the water heater until it has been fully checked out by a qualified technician, if the water heater:

- Has been exposed to fire or damage.
- Displays evidence of sooting.
- Produces steam or unusually hot water.

If the water heater has been flooded it must be replaced.

START UP CONDITIONS

NEVER OPERATE THE HEATER WITHOUT FIRST BEING CERTAIN IT IS FILLED WITH WATER AND A TEMPERATURE AND PRESSURE RELIEF VALVE IS INSTALLED IN THE RELIEF VALVE OPENING OF THE HEATER. DO NOT ATTEMPT TO OPERATE HEATER WITH COLD WATER INLET VALVE CLOSED.

CONDENSATE

Whenever the water heater is filled with cold water, some condensate will form while the burner is on. A water heater may appear to be leaking when in fact the water is condensate. This usually happens when:

a. A new water heater is filled with cold water for the first time.
b. Burning gas produces water vapor in water heaters, particularly high efficiency models where flue temperatures are lower.
c. Large amounts of hot water are used in a short time and the refill water in the tank is very cold.

Moisture from the products of combustion condense on the cooler tank surfaces and form drops of water which may fall onto the burner or other hot surfaces to produce a “sizzling” or “frying” noise.

Because of the suddenness and amount of water, condensate water may be diagnosed as a “tank leak”. After the water in the tank warms up (about 1-2 hours), the condition should disappear.

Do not assume the water heater is leaking until there has been enough time for the water in the tank to warm up.

An undersized water heater will cause more condensation. The water heater must be sized properly to meet the family’s demands for hot water including dishwashers, washing machines and shower heads.

Excessive condensate may be noticed during the winter and early spring months when incoming water temperatures are at their lowest.

Good venting is essential for a gas fired water heater to operate properly as well as to carry away products of combustion and water vapor.

SMOKE/ODOR

It is not uncommon to experience a small amount of smoke and odor during the initial start-up. This is due to burning off of oil from metal parts, and will disappear in a short while.

THERMAL EXPANSION

CAUTION

Improper installation and use may result in property damage.

- Avoid water heater damage.
- Install thermal expansion tank or device if necessary.
- Contact qualified installer or service agency.

Water supply systems may, because of such events as high line pressure, frequent cut-offs, the effects of water hammer among others, have installed devices such as pressure reducing valves, check valves, back flow preventers, etc. to control these types of problems. When these devices are not equipped with an internal by-pass, and no other measures are taken, the devices cause the water system to be closed. As water is heated, it expands (thermal expansion) and closed systems do not allow for the expansion of heated water.

The water within the water tank expands as it is heated and increases the pressure of the water system. If the relieving point of the water heater’s temperature-pressure relief valve is reached, the valve will release the excess pressure. The temperature-pressure relief valve is not intended for the constant relief of thermal expansion. This is an unacceptable condition and must be corrected. It is recommended that any devices installed which could create a closed system have a by-pass and/or the system have an expansion tank or device to relieve the pressure built by thermal expansion in the water system. Expansion tanks are available for ordering through a local plumbing contractor. Contact the local water heater supplier or service agency for assistance in controlling these situations.

STRANGE SOUNDS

Possible noises due to expansion and contraction of some metal parts during periods of heat-up and cool-down do not necessarily represent harmful or dangerous conditions.

Condensation causes sizzling and popping within the burner area during heating and cooling periods and should be considered normal. See “Condensate” in this section.

OPERATIONAL CONDITIONS

SMELLY WATER

In each water heater there is installed at least one anode rod (see parts section) for corrosion protection of the tank. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is one of a “rotten egg smell” in the hot water. The smell is a result of four factors which must all be present for the odor to develop:

a. A concentration of sulfate in the supply water.
b. Little or no dissolved oxygen in the water.
c. A sulfate reducing bacteria which has accumulated within the water heater (this harmless bacteria is nontoxic to humans).
d. An excess of active hydrogen in the tank. This is caused by the corrosion protective action of the anode.

Smelly water may be eliminated or reduced in some water heater models by replacing the anode(s) with one of less active material, and then chlorinating the water heater tank and all water

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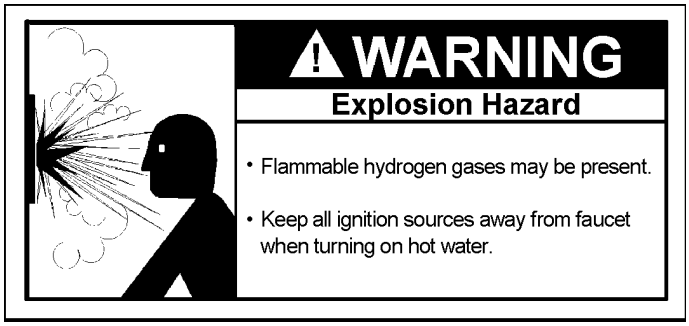
lines. Contact the local water heater supplier or service agency for further information concerning an Anode Replacement Kit and this chlorination treatment.

If the smelly water persists after the anode replacement and chlorination treatment, we can only suggest that chlorination or aeration of the water supply be considered to eliminate the water problem.

Do not remove the anode leaving the tank unprotected. By doing so, all warranty on the water heater tank is voided.

“AIR” IN HOT WATER FAUCETS


WARNING
Explosion Hazard
• Flammable hydrogen gases may be present.
• Keep all ignition sources away from faucet when turning on hot water.

HYDROGEN GAS: Hydrogen gas can be produced in a hot water system that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable and explosive. To prevent the possibility of injury under these conditions, we recommend the hot water faucet, located farthest away, be opened for several minutes before any electrical appliances which are connected to the hot water system are used (such as a dishwasher or washing machine). If hydrogen gas is present, there will probably be an unusual sound similar to air escaping through the pipe as the hot water faucet is opened. There must be no smoking or open flame near the faucet at the time it is open.

HIGH WATER TEMPERATURE SHUT OFF SYSTEM

This water heater is equipped with an automatic gas shut-off system. This system works when high water temperatures are present. Turn “OFF” the entire gas supply to the water heater. The high temperature shut-off is built into the gas control valve. It is non-resettable. If the high temperature shut-off activates, the gas control valve must be replaced. Contact your gas supplier or service agency.

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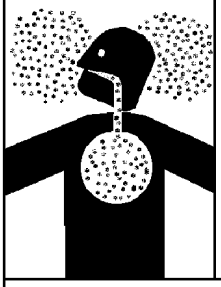
FOR YOUR SAFETY AND SATISFACTORY OPERATION, IT IS RECOMMENDED THAT THIS HEATER BE CHECKED ONCE A YEAR BY A COMPETENT SERVICE PERSON.

USERS OF THIS APPLIANCE SHOULD BE AWARE THAT GAS COMPONENTS WEAR OUT OVER A PERIOD OF TIME. THE GAS CARRYING COMPONENTS OF THIS APPLIANCE SHOULD BE INSPECTED FOR PROPER OPERATION PERIODICALLY BY A QUALIFIED SERVICE TECHNICIAN.

VENTING SYSTEM INSPECTION

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- Flue gases may escape if vent pipe is not connected.
- Be alert for obstructed, sooted or deteriorated vent system to avoid serious injury or death.
- Do not store corrosive chemicals in vicinity of water heater.
- Chemical corrosion of flue and vent system can cause serious injury or death.

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

At least once a year a visual inspection should be made of the venting system. You should look for:

1. Obstructions which could cause improper venting. The combustion and ventilation air flow must not be obstructed.
2. Damage or deterioration which could cause improper venting or leakage of combustion products.

Be sure the vent piping is properly connected to prevent escape of dangerous flue gasses which could cause deadly asphyxiation.

Obstructions and deteriorated vent systems may present serious health risk or asphyxiation.

Chemical vapor corrosion of the flue and vent system may occur if air for combustion contains certain chemical vapors. Spray can propellants, cleaning solvents, refrigerator and air conditioner refrigerants, swimming pool chemicals, calcium and sodium chloride, waxes, bleach and process chemicals are typical compounds which are potentially corrosive.

If after inspection of the vent system you found sooting or deterioration, something is wrong. Call the local gas utility to correct the problem and clean or replace the flue and venting before resuming operation of the water heater.

PILOT AND MAIN BURNER

Flood damage to a water heater may not be readily visible or immediately detectable. However, over a period of time a flooded water heater will create dangerous conditions which can cause DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE. Contact a qualified installer or service agency to replace a flooded water heater. Do not attempt to repair the unit! It must be replaced!

At least once a year a visual inspection should be made of the main burner and the pilot assembly for proper flame characteristics. This can be done by removing the Outer Door and viewing the main burner operation through the Viewport on the Inner Door, see Figure 1. The main burner should provide complete combustion of gas, ignite rapidly, give reasonably quiet operation, and cause no excessive flame lifting from the burner ports. If the proper flame characteristics are not evident (see Figure 1), make sure that the flow of combustion and ventilation air is not blocked in the venting system.

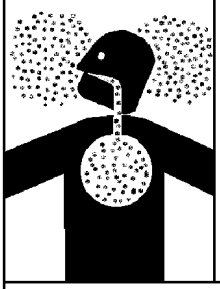
You should also check for sooting. Soot is not normal and will impair proper combustion. A visual inspection of the main burner and pilot assembly should also be done at least once a year, see Figure 1.

Soot build-up indicates a problem that requires correction before further use. Turn “OFF” gas to water heater and leave off until repairs are made, because failure to correct the cause of the sooting can result in a fire causing death, serious injury, or property damage.

If proper flame characteristics are not evident, check for accumulation of lint or other foreign material that restricts or blocks the air openings in the heater or burner.

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- Flue gases may escape if vent pipe is not connected.
- Be alert for obstructed, sooted or deteriorated vent system to avoid serious injury or death.
- Do not store corrosive chemicals in vicinity of water heater.
- Chemical corrosion of flue and vent system can cause serious injury or death.

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

SOOT BUILD-UP INDICATES A PROBLEM THAT REQUIRES CORRECTION BEFORE FURTHER USE. CONSULT WITH A QUALIFIED SERVICE TECHNICIAN.
Should the main burner or burner air openings require cleaning, turn the gas control knob to “OFF” position and allow the burner to cool. Remove the burner and clean with a soft brush. Clean main burner orifice with a suitable soft material.

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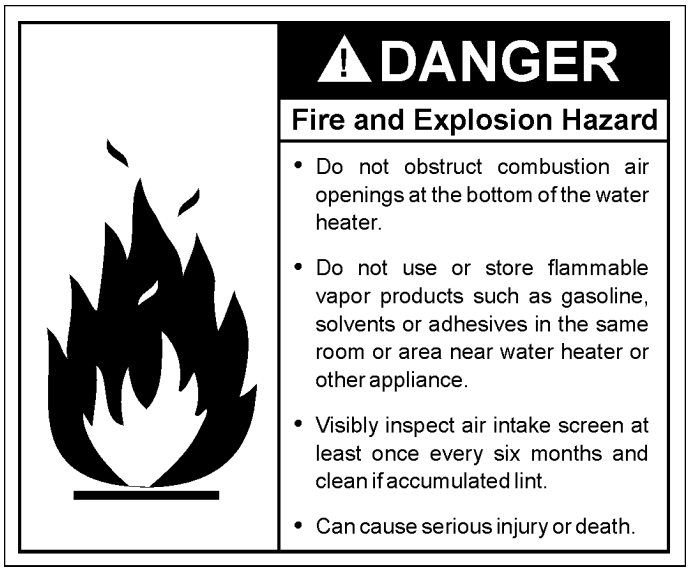
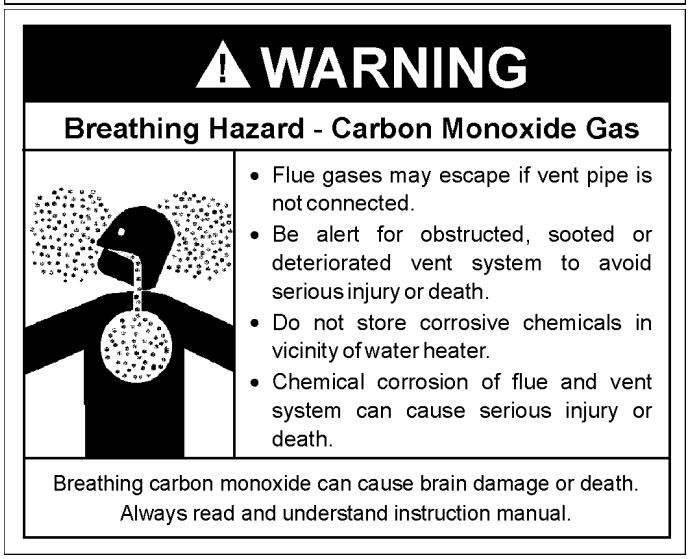

DANGER
Fire and Explosion Hazard
• Do not obstruct combustion air openings at the bottom of the water heater.
• Do not use or store flammable vapor products such as gasoline, solvents or adhesives in the same room or area near water heater or other appliance.
• Visibly inspect air intake screen at least once every six months and clean if accumulated lint.
• Can cause serious injury or death.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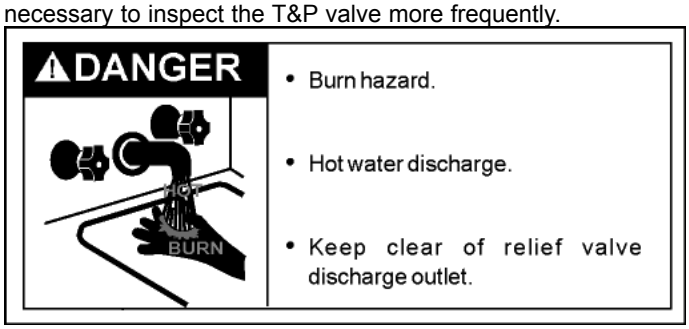
• Do not store corrosive chemicals in vicinity of water heater.
• Chemical corrosion of flue and vent system can cause serious injury or death.
Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

TEMPERATURE & PRESSURE RELIEF VALVE

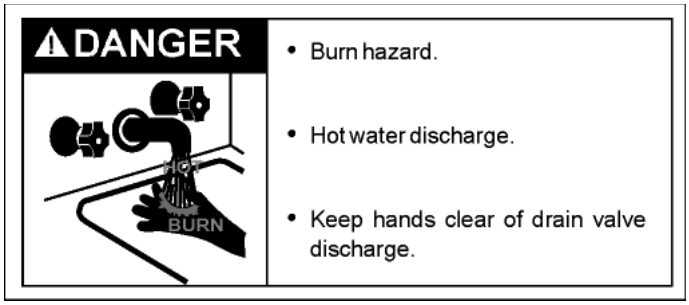
At least once a year, the temperature and pressure relief valve, Figure 1, must be checked to ensure that it is in operating condition. Lift the lever at the top of the valve several times until the valve seats properly and operates freely.
If water does not flow, remove the valve and inspect for obstructions or corrosion. Have a qualified servicer replace with a new valve of the recommended size as necessary. Do not attempt to repair the valve, as this could result in improper operation and a tank explosion. In areas with poor water conditions, it may be necessary to inspect the T&P valve more frequently.



THE WATER PASSING OUT OF THE VALVE DURING THIS CHECKING OPERATION MAY BE EXTREMELY HOT. AVOID CONTACT AND DISCHARGE SAFELY TO PREVENT WATER DAMAGE.

DRAINING

If the heater is to be shut off and exposed to freezing temperatures, it must be drained. Water, if left in the tank and allowed to freeze, will damage the heater.
- Turn off the gas and cold water inlet valve to the heater, Figure 1.
- Open a nearby hot water faucet and the heater drain valve.
- BE CAREFUL TO GRASP THE DRAIN VALVE HANDLE SO THAT THE HAND IS NOT EXPOSED TO HOT WATER. IF DESIRED, A HOSE MAY BE CONNECTED TO THE DRAIN VALVE TO CARRY THE WATER AWAY.



The water CAN BE HOT.
- The drain valve must be left open during the shutdown period.
- To restart heater, refer to the FILLING instructions under OPERATION.

Periodically open the drain valve and allow the water to run until it flows clean. This will help prevent sediment build-up in the tank.

It is normal for lime and scale deposits to form within the tank. Such deposits will not be removed by periodic draining. It is necessary to chemically delime the affected parts in water areas where such deposits are encountered. Contact your dealer or plumber for deliming information.

CATHODIC PROTECTION - ANODE

The anode rod within the tank is designed to be slowly consumed cathodically, minimizing corrosion in the glass-lined tank. A hydrogen sulfide (rotten egg) odor may result if water contains high sulfate and/or minerals. Chlorinating the water supply should minimize the problem. (See EXTENDED NON-USE PERIODS).

NOTE: Anode must remain installed (except for inspection) to avoid shortening tank life. See LIMITED WARRANTY. Replace as necessary.

ANODE ROD MAINTENANCE

The anode rod is used to protect the tank from corrosion. Most hot water tanks are equipped with an anode rod. The submerged rod sacrifices itself to protect the tank. Instead of corroding the tank, water ions attack and eat away the anode rod. This does not affect the water's taste or color. The rod must be maintained to keep the tank in operating condition.
Anode deterioration depends on water conductivity, not necessarily water condition. A corroded or pitted anode rod indicates high water conductivity and should be checked and/or replaced more often than an anode rod that appears to be intact. Replacement of a depleted anode rod can extend the life of your water heater. Inspection should be conducted by a qualified technician, and at a minimum should be checked annually after the warranty period.

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Before removing the anode: 1) the tank water should be cool, 2) the cold water shut off valve must be closed, and 3) water pressure must be relieved by opening a nearby faucet.

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Inspection and replacement of anode rod required.

DRAIN VALVE WASHER REPLACEMENT

(See Figure 30)

1. Turn “OFF” gas supply to water heater.
2. Follow “Draining” instructions.
3. Turning counterclockwise ( ), remove the hex cap below the screw handle.
4. Remove the washer and put the new one in place.
5. Screw the handle and cap assembly back into the drain valve and retighten using a wrench. DO NOT OVER TIGHTEN.
6. Follow instructions in the “Filling The Water Heater” section.
7. Check for leaks.
8. Follow the lighting instructions in the “Lighting” section to restart the water heater.

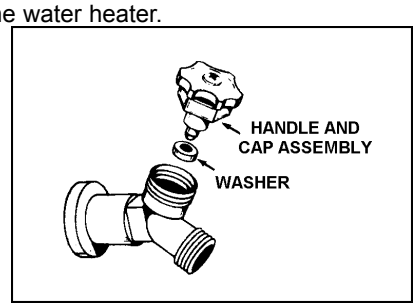

FIGURE 30

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LEAKAGE CHECKPOINTS

SERVICE

If a condition persists or you are uncertain about the operation of the water heater contact a service agency.

Use this guide to check a “Leaking” water heater. Many suspected “Leakers” are not leaking tanks. Often the source of the water can be found and corrected.

If you are not thoroughly familiar with gas codes, your water heater, and safety practices, contact your gas supplier or qualified installer to check the water heater.

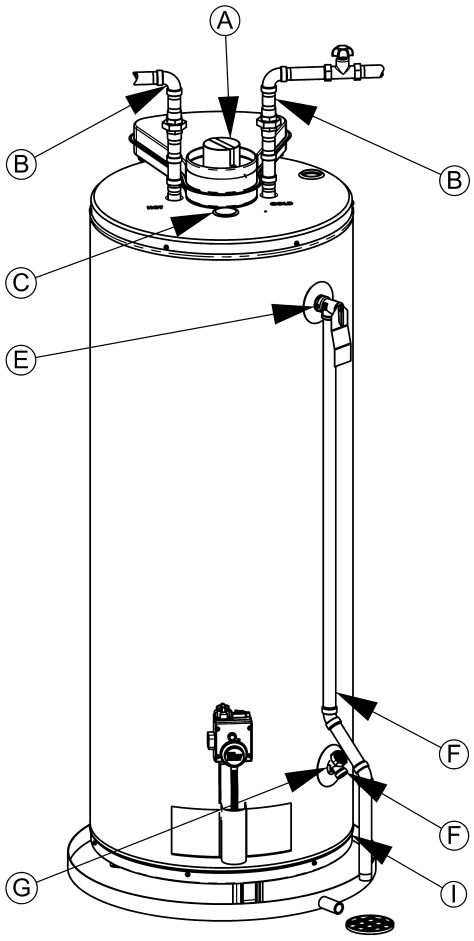
Read this manual first. Then before checking the water heater make sure the gas supply has been turned “OFF”, and never turn the gas “ON” before the tank is completely full of water.

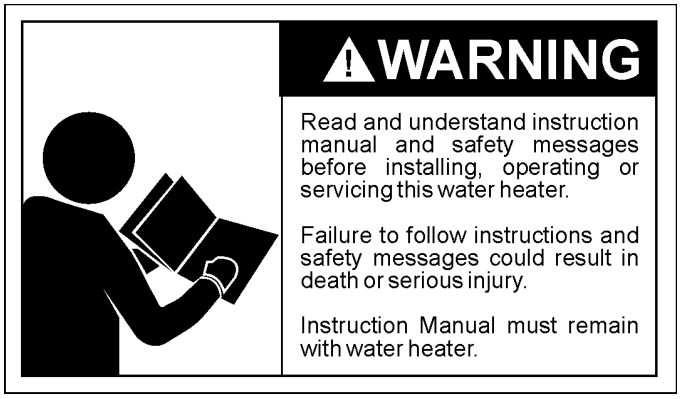
Never use this water heater unless it is completely filled with water. To prevent damage to the tank, the tank must be filled with water. Water must flow from the hot water faucet before turning “ON” gas to the water heater.

A. Water at the blower assembly is water vapor which has condensed out of the combustion products. This is caused by a problem in the vent. Contact the gas utility.
B. *Condensation may be seen on pipes in humid weather or pipe connections may be leaking.
C. *The anode rod fitting may be leaking (anode is located under the Blower Assembly).
D. Small amounts of water from temperature-pressure relief valve may be due to thermal expansion or high water pressure in your area.
E. *The temperature-pressure relief valve may be leaking at the tank fitting.
F. Water from a drain valve may be due to the valve being slightly opened.
G. *The drain valve may be leaking at the tank fitting.
H. Combustion products contain water vapor which can condense on the cooler surfaces of the tank. Droplets form and drip onto the burner or run on the floor. This is common at the time of start-up after installation and when incoming water is cold.
I. Water in the water heater bottom or on the floor may be from condensation, loose connections, or the relief valve. DO NOT replace the water heater until a full inspection of all possible water sources is made and necessary corrective steps taken.

Leakage from other appliances, water lines, or ground seepage should also be checked.

* To check where threaded portion enters tank, insert cotton swab between jacket opening and fitting. If cotton is wet, follow “Draining” instructions in the “Periodic Maintenance” section and then remove fitting. Put pipe dope or Teflon tape on the threads and replace. Then follow “Filling the Water Heater” instructions in the “Installing the New Water Heater” section.




WARNING
Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.
Failure to follow instructions and safety messages could result in death or serious injury.
Instruction Manual must remain with water heater.

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TROUBLESHOOTING GUIDELINES

PROBLEM	POSSIBLE CAUSE(S)	CORRECTION
BURNER WILL NOT IGNITE	1. Pilot not lit 2. Thermostat set too low 3. No gas 4. Dirt in the gas lines 5. Pilot line clogged 6. Main burner line clogged 7. Defective thermocouple 8. Defective gas control/thermostat 9. Heater installed in a confined area	1. Light pilot 2. Turn temp. dial to desired temperature 3. Check with gas utility company 4. Notify utility-install trap in gas line 5. Clean, locate source and correct 6. Clean, locate source and correct 7. Replace thermocouple 8. Replace gas control/thermostat 9. Provide fresh air ventilation
SMELLY WATER	1. Sulfur in the water	1. Replace the anode with a special anode
BURNER FLAME YELLOW-LAZY	1. Insufficient secondary air 2. Low gas pressure 3. Flue clogged 4. Main burner line clogged 5. Heater installed in a confined area 6. Obstruction in main burner orifice	1. Provide ventilation to water heater 2. Check with gas utility company 3. Clean, locate source and correct 4. Clean, locate source and correct 5. Proper fresh air ventilation 6. Clean or replace orifice
PILOT WILL NOT LIGHT OR REMAIN LIT	1. Air in gas line 2. No gas 3. Dirt in gas lines 4. Pilot line or orifice clogged 5. Thermocouple connection loose 6. Defective thermocouple 7. Cold drafts 8. Gas control/thermostat ECO switch open 9. Door-mount temperature cut-off (TCO) switch activated. 10. Defective igniter or electrode 11. Flammable vapors incident, Flame Guard™ function activated 12. Low gas pressure 13. Improper installation of the quick connects in the TCO-switch, loose connection or interrupted gas control leads.	1. Bleed the air from the gas line 2. Check with gas utility company 3. Notify utility-install dirt trap in gas line 4. Clean, locate source and correct 5. Finger tighten: then 1/4 turn with wrench 6. Replace thermocouple 7. Locate source and correct 8. Replace gas control/thermostat 9. Call a qualified service technician 10. Replace igniter or pilot assembly 11. Replace water heater, eliminate flammable vapors source. Call a qualified service technician 12. Check with gas utility company 13. Reset the TCO - switch. Check if the quick connects are firmly inserted on TCO switch contacts.
HIGH OPERATION COSTS	1. Thermostat set too high 2. Sediment or lime in tank 3. Water heater too small for job 4. Wrong piping connections 5. Leaking faucets 6. Gas leaks 7. Wasted hot water 8. Long runs of exposed piping 9. Hot water piping in exposed wall 10. Leaks or cracks in dip tube	1. Set temperature dial to lower setting 2. Drain/Flush-Provide water treatment if needed 3. Install adequate size heater 4. Correct piping-dip tube must be in cold inlet 5. Repair faucets 6. Check with utility-repair at once 7. Advise customer 8. Insulate piping 9. Insulate piping 10. Check dip tube. Replace if faulty
PILOT FLAME TOO SMALL	1. Pilot line or orifice clogged 2. Low gas pressure 3. Defective pilot	1. Clean, locate source and correct 2. Check with gas utility company 3. Replace pilot
INSUFFICIENT HOT WATER	1. Thermostat set too low 2. Sediment or lime in tank 3. Water heater too small 4. Wrong piping connections 5. Leaking faucets 6. Wasted hot water 7. Long runs of exposed piping 8. Hot water piping in outside wall 9. Low gas pressure	1. Turn temperature dial to desired setting 2. Drain/flush-provide water treatment if needed 3. Install adequate size heater 4. Correct piping-dip tube must be in cold inlet 5. Repair faucets 6. Advise customer 7. Insulate piping 8. Insulate piping 9. Check with gas utility company

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PROBLEM	POSSIBLE CAUSE(S)	CORRECTION
SLOW HOT WATER RECOVERY	1. Insufficient secondary air 2. Flue clogged 3. Low gas pressure 4. Improper calibration 5. Gas control/thermostat set too low 6. Water heater too small 7. Wrong piping connections 8. Wasted hot water	1. Provide ventilation to water heater. Check flue way, flue baffle and burner 2. Clean flue, locate source and correct 3. Check with gas utility company 4. Replace gas control/thermostat 5. Turn temperature dial to desired setting 6. Install adequate size heater 7. Correct piping-dip tube must be in cold inlet 8. Advise customer
DRIP FROM RELIEF VALVE	1. Excessive water pressure 2. Heater stacking 3. Closed water system 4. Temperature setting too high	1. Use a pressure reducing valve and relief valve 2. Lower the thermostat setting 3. See “Closed System/Thermal Expansion” 4. Decrease the temperature setting
THERMOSTAT FAILS TO SHUT OFF	1. Defective gas control/thermostat 2. Improper calibration	1. Replace gas control/thermostat 2. Replace gas control/thermostat
COMBUSTION ODORS	1. Insufficient secondary air 2. Flue clogged 3. Heater installed in a confined area	1. Provide ventilation to water heater. Check flue way, flue baffle, burner 2. Clean, locate source and correct 3. Provide fresh air ventilation
SMOKING AND CARBON FORMATION (SOOTING)	1. Insufficient secondary air 2. Low gas pressure 3. Flue clogged 4. Defective gas control/thermostat 5. Heater installed in a confined area 6. Burner flame yellow-lazy	1. Provide ventilation to water heater. Check flue way, flue baffle, burner 2. Check with gas utility company 3. Clean, locate source and correct 4. Replace gas control/thermostat 5. Provide fresh air ventilation 6. See “Burner Flame Yellow-Lazy”
CONDENSATION	1. Temperature setting too low 2. Water heater too small	1. Increase the temperature setting 2. Install adequate size heater
BURNER FLAME FLOATS AND LIFTS OFF PORTS	1. Orifice too large 2. High gas pressure 3. Flue clogged 4. Cold drafts	1. Replace with correct orifice 2. Check with gas utility company 3. Clean flue and burner-locate source & correct 4. Locate source and correct
BURNER FLAME TOO HIGH	1. Orifice too large	1. Replace with correct orifice
FLAME BURNS AT ORIFICE	1. Defective gas control/thermostat 2. Low gas pressure 3 Orifice not properly installed	1. Replace gas control/thermostat 2. Check with gas utility company 3 Reinstall the orifice

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NOTES

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A.O.Smith
Water Heaters

RESIDENTIAL GAS WARRANTY

THIS WARRANTY IS APPLICABLE TO THE ORIGINAL OWNER ONLY in accordance with the warranty terms and conditions specified below.

The warrantor will furnish the ORIGINAL OWNER, 1) a replacement water heater of equivalent size and current model if the glass-lined tank in this water heater leaks and, 2) a replacement part for any component part which fails.

THE WATER HEATER REPLACEMENT MODEL OR PART WILL BE WARRANTED FOR ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY. The warranty period will be determined by the original date of purchase of the water heater, or in the absence of a Bill of Sale verifying said date, from the date of manufacture indicated on rating plate affixed to this water heater. This warranty is not transferable and applies to models listed below:

SERIES	TANK	PARTS
ProMax 10-Year Models XCV, XCVL, XCVH, XVR, XCVT, XCVX	**10-Year**	**6-Year**
ProMax 6-Year Models GCV, GCVL, GCVH, GVR, GCVT, GCVX, GCNH, GNR, GDV, GDVT	**6-Year**	**6-Year**

When the water heater has been used for other than single family residential application;

1. The tank warranty shall be reduced to 1 year for 6 year models.

2. The parts warranty shall be reduced to 1 year for all models.

CONDITIONS AND EXCEPTIONS

This warranty shall apply only when the water heater is installed and operated in accordance with 1) all local fire codes and plumbing codes, ordinances and regulations, 2) the printed instructions provided with it, 3) good industry practices, and 4) proper safety practices such as but not limited to a properly sized drain pan if installed in an area where leakage from the tank or its connections would result in damage to the area adjacent to the heater. In addition, a new temperature and pressure relief valve, certified by the Canadian Gas Association must have been properly installed and piped to the nearest drain.

This warranty shall apply only when the heater is:

- owned by the original purchaser;
- installed for indoor operation only;
- used at temperatures not exceeding the maximum calibrated setting of its thermostat;
- used at water pressure not exceeding the working pressure shown on the heater;
- filled with potable water, free to circulate at all times and with the tank free of damaging water sediment or scale deposits;
- used in a non-corrosive and non-contaminated atmosphere;
- used with factory approved anode(s) installed;
- in its original installation location;
- in the United States, its territories or possessions, and Canada;
- sized in accordance with proper sizing techniques for residential water heaters;
- bearing a rating plate which has not been altered, defaced or removed except as required by the warrantor;
- used in an open system or in a closed system with a properly sized and installed thermal expansion tank;
- operated with properly installed drip leg in the gas supply line;
- fired with the fuel for which it was factory built;
- fired at the factory rated input;
- operated with the inner and outer combustion chamber doors in place and all factory seals to combustion chamber intact.
- installed with no attempted, nor actual modification or alteration of the water heater's design in any way, including but not limited to, the attachment of non-company approved appliances or equipment.

Any accident to the water heater or any part thereof (including freezing, fire, floods, or lightning), any misuse, abuse or alteration of it, any operation of it in a modified form, any operation of the water heater on desalinated (deionized) water, or any damage caused by attempts to repair tank leaks or parts, will void this warranty. This warranty does not cover water heaters replaced for cosmetic reasons or for reasons of noise, taste, odor, discolored and/or rusty water. This warranty does not apply to water heaters used to heat pools, whirlpools or hot tubs or used for space heating where its sizing does not conform with specifications of the heating component manufacturer.

This warranty gives you specific legal rights, and you may have other rights which vary under the laws of each state. If any provision of this warranty is prohibited or invalid under applicable state law, that provision shall be ineffective to the extent of the prohibition or invalidity without invalidating the remainder of the affected provision or the other provisions of this warranty.

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SERVICE AND LABOR RESPONSIBILITY

UNDER THIS LIMITED WARRANTY, THE WARRANTOR WILL PROVIDE ONLY A REPLACEMENT WATER HEATER OR PART THEREOF. THE OWNER IS RESPONSIBLE FOR ALL OTHER COSTS. Such costs may include but are not limited to:

a. Labor charges for service, removal, or reinstallation of the water heater or part thereof.

b. Shipping and delivery charges for forwarding the new water heater or replacement part from the nearest distributor and returning the claimed defective heater or part to such distributor.

c. All cost necessary or incidental for handling and administrative charges, and for any materials and/or permits required for installation of the replacement heater or part.

LIMITATION ON IMPLIED WARRANTIES

Implied warranties, including any warranty of merchantability imposed on the sale of this heater under state law are limited to one year duration for the heater or any of its parts. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

CLAIM PROCEDURE

Any claim under this warranty should be initiated with the dealer who sold the heater, or with any other dealer handling the warrantor's products. If this is not practical, the owner should contact: A. O. Smith Water Heaters, 500 Tennessee Waltz Parkway, Ashland City, Tennessee 37015. Phone: 1.800.527.1953 or visit our website: www.hotwater.com.

Replacement Parts may be ordered through authorized servicers or distributors. Refer to your local Yellow Pages for where to call or contact A. O. Smith Water Heater Parts Fullfillment, 125 Southeast Parkway, Franklin, TN 37068, phone: 1.800.433.2545.

The warrantor will only honor replacement with identical or similar water heater or parts thereof which are manufactured or distributed by the warrantor.

Dealer replacements are made subject to in-warranty validation by warrantor.

PROOF-OF-PURCHASE AND PROOF-OF-INSTALLATION DATE ARE REQUIRED TO SUPPORT WARRANTY CLAIM FROM ORIGINAL OWNER. THIS FORM DOES NOT CONSTITUTE PROOF-OF-PURCHASE OR PROOF-OF-INSTALLATION.

DISCLAIMERS

NO EXPRESSED WARRANTY HAS BEEN OR WILL BE MADE ON BEHALF OF THE WARRANTOR WITH RESPECT TO THE MERCHANTABILITY OF THE HEATER OR THE INSTALLATION, OPERATION, REPAIR OR REPLACEMENT OF THE HEATER OR PARTS. THE WARRANTOR SHALL NOT BE RESPONSIBLE FOR WATER DAMAGE, LOSS OF USE OF THE UNIT, INCONVENIENCE, LOSS OR DAMAGE TO PERSONAL PROPERTY, OR OTHER CONSEQUENTIAL DAMAGE. THE WARRANTOR SHALL NOT BE LIABLE BY VIRTUE OF THIS WARRANTY OR OTHERWISE FOR DAMAGE TO ANY PERSONS OR PROPERTY, WHETHER DIRECT OR INDIRECT, AND WHETHER ARISING IN CONTRACT OR IN TORT.

Should governmental regulations or industry standards prohibit the Manufacturer from furnishing a comparable model replacement under this warranty, the Owner will be furnished with the closest comparable water heater meeting the then current governmental regulations and industry standards. A supplementary fee may be assessed to cover the additional cost associated with the changes made to meet applicable regulations and standards.

MPORTANT INFORMATION

Model Number _____

Serial Number _____

INSTALLATION INFORMATION

Date Installed _____

Company's Name _____

Street or P.O. Box _____

City, State, and Zip Code _____

Phone Number _____

Plumber's Name _____

A.O.Smith
Water Heaters

500 Tennessee Waltz Parkway, Ashland City, TN 37015
Phone: 800-433-2545 • Fax: 800-644-9306
Website: www.hotwater.com

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